AECOM

April 2010

Syar Alexander Valley Instream Mining Project and Sonoma County ARM Plan Amendments

Draft Environmental Impact Report

SCH# 2006042101

Prepared for
County of Sonoma Permit
and Resource Management Department

List of Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ac	Acres
ACTMs	State Air Toxic Control Measures
ADT	Average Daily Traffic
af	Acre Feet
afy	Acre Feet per Year
AMS	Adaptive Management Strategy
ANSI	American National Standards Institute
APN	Assessor’s Parcel Number
ARB	California Air Resources Board
AREL	Acute Reference Exposure Level
ARM	Aggregate Resource Management (Plan)
ASTM	American Society for Testing and Materials
ATCM	Airborne Toxics Control Measure
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology (for toxics)
Basin Plan	Water Quality Control Plan for the North Coast Region
BMP	Best Management Practices
BO	Biological Opinion
BR	Biotic Resources Combining District
CAA	Clean Air Act of 1970
CAAA	Clean Air Act Amendments of 1990
CAAQS	California Ambient Air Quality Standards

Cal/OSHA	California Department of Industrial Relations, Division of Occupational Safety and Health
Cal/OSHA	California Occupational Safety & Health Administration
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CE	California State Endangered
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	Cubic Feet per Second
CH_4	Methane
CHP	California Highway Patrol
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
County	Sonoma County
CPUC	California Public Utilities Commission
CREL	Chronic Reference Exposure Level
CRHR	California Register of Historical Resources
CSC	California Species of Concern
CWA	Clean Water Act
cy	Cubic Yards

DA	Diverse Agriculture
dB	Decibel
db/DD	Decibel per Doubling of Distance
dbh	Diameter at Beast Height
DEIR	Draft Environmental Impact Report
DEM	Digital Elevation Model
DFG	California Department of Fish and Game
DPS	Distinct Population Segment
DTM	Digital Terrain Model
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EDSH	Effective Discharge Stage Height
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EOC	Sonoma County Emergency Operations Center
EPA	US Environmental Protection Agency
EPT	Ephemeroptera Plecoptera Trichoptera
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
F1	F1 Floodway Combining District
F2	F2 Floodplain Combining District
FE	Federally Endangered
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIP	Federal Implementation Plan

FR	Federal Register
FT	Federally Threatened
FTA	Federal Transit Administration
GHG	Green House Gas(es)
GP 2020	Sonoma County General Plan 2020 Update
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HRA	Health Risk Assessment
HU	Hydrologic Unit
IPCC	Intergovernmental Panel on Climate Change
L_{dn}	Day-Night Noise Level
LEA	Land Extensive Agriculture
L_{eq}	Equivalent Noise Level
LIA	Land Intensive Agriculture
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LOS	Level of Service
LP	Louisiana Pacific
LWD	Large Woody Debris
MACT	Maximum Available Control Technology
MBTA	Migratory Bird Treaty Act
MEI	Maximally Exposed Individual
MLD	Most Likely Descendant
MMI	Modified Mercalli Intensity
MOU	Memorandum of Understanding
mph	Miles per hour

MR	Mineral Resource (Combining District)
MT/y	Metric Tons per Year
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCAB	North Coast Air Basin
NCRA	North Coast Railroad Authority
NES	National Emissions Standards
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHC	Northwest Hydraulics Consultants
NHC	Northwest Hydraulics Consultants
NMFS	National Marine Fisheries Service
NO_2	Nitrogen dioxide
NOA	Naturally Occurring Asbestos
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO_X	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NSCAPCD	Northern Sonoma County Air Pollution Control District
NSPS	New Source Performance Standards
NSR	Federal New Source Review
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazard Assessment
OHWM	Ordinary High-Water Mark
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety & Health Administration

OWRRI	Oregon Water Resources Research Institute
PAH	Polycyclic Aromatic Hydrocarbons
PCE	Passenger Car Equivalent
PEIR	Program Environmental Impact Report
PM_x	Particulate Matter (less than or equal to x microns in diameter)
Ppm	Part per Million
PPV	Peak Particle Velocity
PRMD	Sonoma County Permit and Resource Management Department
RCD	Resource Conservation District
REP	River Enhancement Plan
RM	River Mile
RMS	Root Mean Square
ROG	Reactive Organic Gases
RR	Rural Residential
RRD	Resource and Rural Development
RRDWA	Resources and Rural Development (Agricultural Preserve) District
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCDES	Sonoma County Department of Emergency Services
SCDHS	Environmental Health Division of the Sonoma County Department of Health Services
SCWA	Sonoma County Water Agency
SEC	Steiner Environmental Consulting
SEL	Sound Exposure Level
SENEL	Single Event Noise Exposure Level
SIP	State Implementation Plan
SLC	State Lands Commission

SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	Surface Mining and Reclamation Act of 1975
SMARO	Sonoma County Surface Mining and Reclamation Ordinance
SMART	Sonoma Marin Area Rail Transit
SO_2	Sulfur dioxide
SPCC	Spill Containment and Countermeasures
SPFL	Spill Prevention Fueling and Lubrication (Plan)
SR	State Route
SRA	Shaded Riverine Aquatic
SRC	Russian River Scientific Review Committee
SRCD	Sotoyome Resource Conservation District
SWPPP	Storm Water Pollution Prevention Plans
SWRCB	State Water Resources Control Board
Syar	Syar Industries, Inc
Syar and PRMD	Syar Industries Inc and Sonoma County Permit and Resource Management Department Interagency Group
TAC	Toxic Air Contaminant
T-BACT	Technology for Toxic Air Contaminant
TMDL	Total Maximum Daily Load
tpy	Tons per Year
US 101	US Highway 101
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VdB	Vibration Decibels
VMT	Vehicle Miles Travel
VOH	Valley Oak Habitat Combining District

WARSSS	Watershed Assessment of River Stability & Sediment Supply
WDR	Waste Discharge Requirement
Z	Second Unit Exclusion (Combining District)

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Appendices

1.0 INTRODUCTION AND PROJECT DESCRIPTION

This section addresses the purpose and contents of this Environmental Impact Report (EIR), the public process and the project locale and setting. This section describes the project as proposed by the applicant, including the proposed mining methods, River Enhancement Plan (REP) activities, and the Adaptive Management Strategy (AMS). The section will then describe alternatives to the proposed project, the required approvals, and the relationship of the project to other projects in the County.

1.1 PURPOSE OF THE EIR

This draft environmental impact report (DEIR) addresses the potential impacts of Syar Industries, Inc.'s (Syar's) request for an Aggregate Resource Management Plan (ARM Plan) amendment, Sonoma County Surface Mining and Reclamation Ordinance (SMARO) amendment, Use Permit, and approval of a reclamation plan to mine gravel bars along a 6.5-mile stretch of the Russian River (from River Mile 47.5 to 54). The Syar Alexander Valley Instream Mining Project (referred to herein as "the project") would allow for continued commercial extraction of aggregate from gravel bars within this stretch of the Russian River within the Alexander Valley reach in Sonoma County, California. Figure 1-1 shows the regional location of the project.

This EIR has been prepared in conformance with the provisions of the California Environmental Quality Act and its Guidelines (State CEQA Guidelines) as amended to date. CEQA requires that public agencies prepare and certify an EIR before carrying out projects that may have a significant effect on the environment (Public Resources Code, Section 21080). Preparation of an EIR is the responsibility of the "lead agency," the public agency that has the principal responsibility for carrying out or approving the project (Public Resources Code, Section 21067). Because the County of Sonoma (County) has the principal responsibility for approving the project, it is the lead agency.

The EIR has been prepared under contract to Sonoma County. This EIR is an informational document intended to inform the County, other public agency decision makers, and the public of the project's significant environmental effects and alternatives to the project. The County will consider the information in this EIR along with other information when deciding whether to approve the ARM Plan amendments and the project. The information contained in this EIR does not control the County's ultimate decision on the project. If the County decides to approve the project, however, then the County must respond to each significant effect identified in the EIR by making findings under Section 15091 of the State CEQA Guidelines and, if necessary, making a statement of overriding considerations under Section 15093 for any significant impacts deemed unavoidable.

1.2 CONTENTS OF THE EIR

This EIR identifies and analyzes all of the project's environmental effects. The State CEQA Guidelines define the effects of a project as changes to the environmental setting that are caused by the project.

Section 15151 of the State CEQA Guidelines specifies that "an EIR should be prepared with a sufficient degree of analysis to provide decision makers with information that enables them to make a decision that intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is reviewed in the light of what is reasonably feasible. What is desired is completeness and a good faith effort at full disclosure."

Section 15003 of the State CEQA Guidelines emphasizes that the purpose of the EIR "is not to generate paper but to compel governments to make decisions with environmental consequences in mind." Technical perfection is not required, but rather "adequacy, completeness, and a good-faith effort at full disclosure." "CEQA requires that decisions be informed and balanced. It must not be subverted into an instrument for the oppression and delay of social, economic, or recreational development or advancement."

Significant Effect

In accordance with Section 15143 of the State CEQA Guidelines, this EIR focuses on the significant effects on the environment. Discussion of each major topic includes criteria for evaluating whether an environmental impact is significant. Section 15002(g) of the State CEQA Guidelines defines a significant effect on the environment as a substantial adverse change in the physical conditions that exist in the area affected by the proposed project.

The significance criteria for each topic are based on the State CEQA Guidelines and standard County practice. This EIR identifies the thresholds of significance for each area of impact and assesses whether the project's impacts would exceed these thresholds. If an impact does not exceed the threshold, it is considered less than significant. If the impact exceeds the threshold, the impact is significant and mitigation measure(s) are proposed. If the mitigation measures would not reduce the impact to a less-than-significant level, then the impact is significant and unavoidable.

Baseline Conditions for this EIR

The State CEQA Guidelines state that an EIR should compare the potential impacts of a project with pre-project environmental conditions. Specifically, Section 15125(a) of the State CEQA Guidelines states, "An EIR must include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the NOP is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant."

All on-site impacts resulting from gravel mining would be considered new impacts because they would occur in an area that is presently undisturbed by mining, even though large portions of the study area have been mined in the past. Project impacts are evaluated against a baseline of conditions as they existed at the time of the NOP.

ARM Plan and Program EIR

The ARM Plan established a regulatory program applicable to all future aggregate operations in areas designated by the plan (Sonoma County 1994). The associated Program EIR (PEIR) addressed the larger environmental setting and cumulative impacts of mining under the ARM Plan and established appropriate mitigation measures as standards under the ARM Plan. Subsequent applications for mining permits and proposed reclamation plans consistent with the ARM Plan are subject to a detailed project-level environmental review. Although the proposed instream mining project is within one of the designated ARM Plan mining areas (the Lower Alexander Valley reach of the Russian River), Syar proposes a longer permit term (15 years)

Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
Sonoma County California

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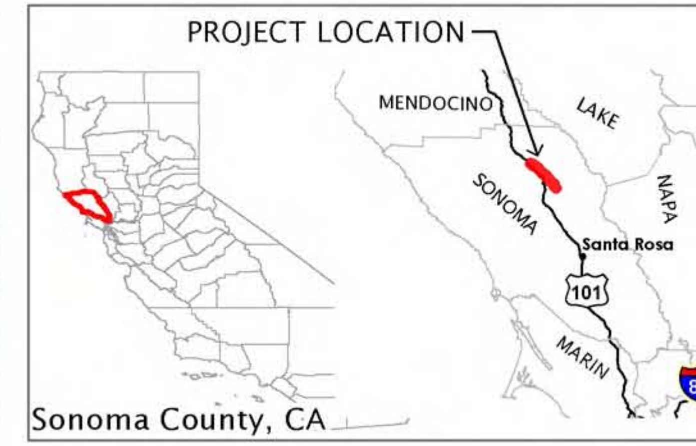

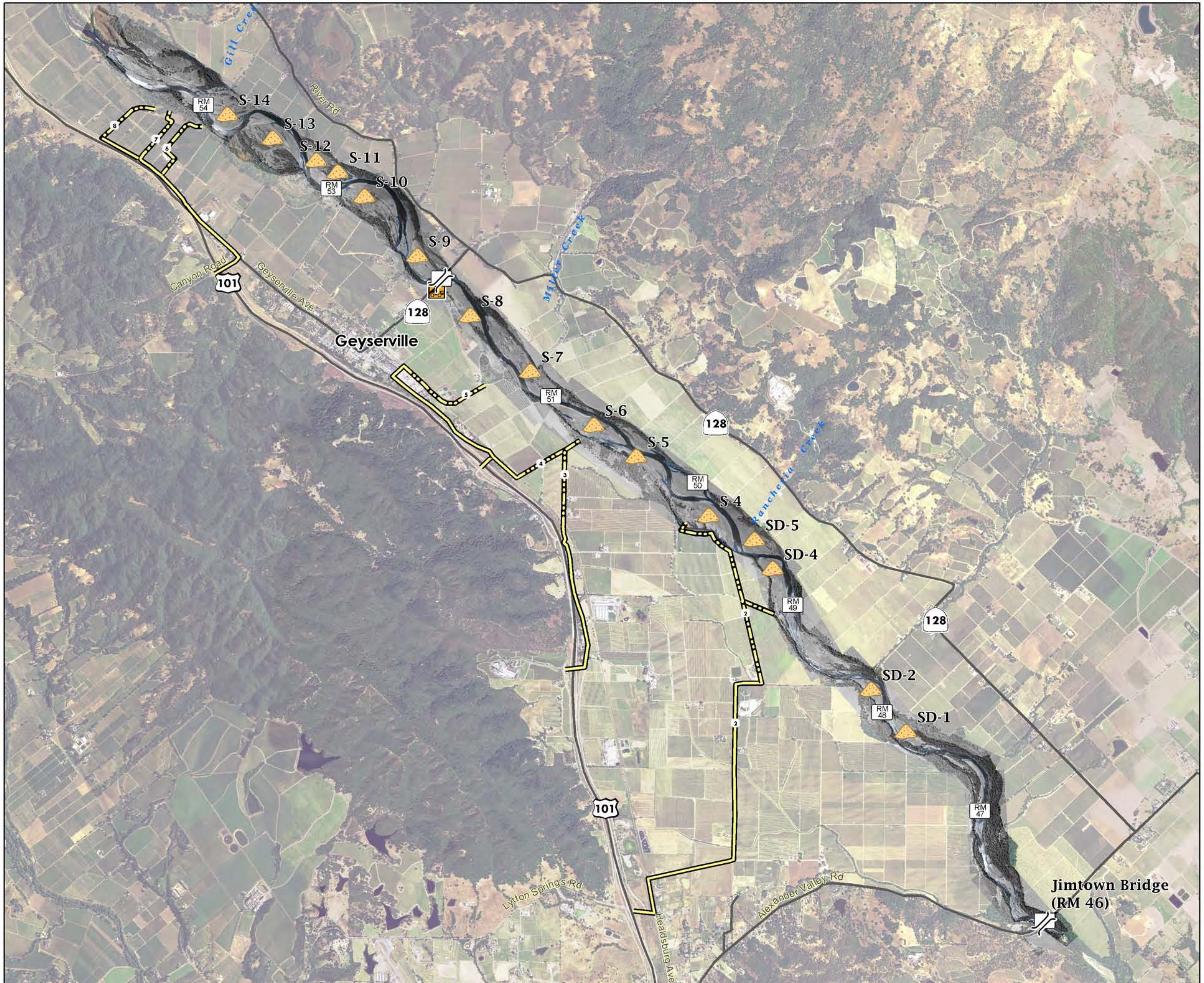

Figure 1-1
Gravel Bar Location Map: Overview

- Gravel Bars
- Staging Area
- Public Access Roads
- Private Access Roads
- Russian River Course (May 2006)
- River Mile Marker
- Main Roads

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

0 1,250 2,500
Feet

Source: Syar Industries inc. EDAW.
Projection State Plane NAD 1983 California II

and a different method of mining than envisioned in the ARM Plan, thus an amendment to the ARM Plan will be required. In addition, Syar has proposed a River Enhancement Plan in lieu of contributions to the Russian River Gravel Mitigation Fund that is required by the ARM Plan for instream mining permits, which will require an additional exception to the ARM. As such, this EIR addresses impacts at both the program-level and the project-level. The program-level impacts of the necessary ARM Plan amendments would primarily occur in and relate to issues of hydrology, and are analyzed in Section 3.2, “Hydrology”. The effects are also discussed in Section 3.4 (Fisheries) and Section 3.3, “Vegetation and Wildlife”. Mitigation measures proposed as changes to the ARM Plan and SMARO are proposed to address Program-level impacts. The required exceptions to the ARM Plan standards for the mining permit are described below following the project description. Chapter 5.0, “Programmatic Level impacts of the Proposed ARM Plan Amendments” summarizes all the ARM Plan amendments and incorporated with mitigation measures.

This EIR also discusses the specific environmental setting of the proposed mining project, analyzes project specific impacts, and recommends appropriate mitigation measures to be incorporated into conditions of approval for the mining permit.

Surface Mining and Reclamation Ordinance (SMARO)

The ARM Plan is implemented through the County’s Surface Mining and Reclamation Ordinance (Chapter 26A of the Sonoma County Code). SMARO incorporates the mining standards of the ARM Plan and establishes permitting procedures. Because Syar is proposing a longer permit term, exceptions to mining standards, and a waiver of mitigation fees that is currently not envisioned in the mining ordinance, an amendment to SMARO will also be required. The required exceptions to the mining ordinance are described below following the project description. Chapter 5.0, “Programmatic Level impacts of the Proposed ARM Plan Amendments” summarizes the ARM Plan and SMARO amendments and incorporated mitigation measures.

1.3 PUBLIC COMMENT PROCESS

NOTICE OF PREPARATION

The County circulated a NOP to prepare an EIR for the project on April 14, 2006. The NOP is included in Appendix A of this EIR. In response to the NOP, the County received letters from:

- the California Department of Fish and Game,
- Russian RiverKeeper, and
- six citizens

These letters are on file with the Sonoma County Permit and Resource Management Department (PRMD). Appendix B of this EIR contains a summary of the comments included in the letters.

PUBLIC SCOPING MEETING

A public scoping meeting was held in Geyserville on May 11, 2006. The major issues and questions raised at this meeting that pertain to the EIR are summarized in Section 2.4, “Areas of

Controversy and Issues to Be Resolved." In addition, a summary of the scoping meeting is in Appendix C of this EIR.

DISTRIBUTION OF THE DEIR

A public review period of 45 days is provided for this EIR. This review period begins on the publication date of the notice of completion of the EIR. During the public review period, the County will hold one public hearing on the EIR before the Planning Commission. In addition, public agencies and interested individuals may submit comments in writing to Chris Seppeler, Sonoma County Permit and Resource Management Department, 2550 Ventura Avenue, Santa Rosa, CA 95403-2829.

CERTIFICATION OF THE FINAL EIR

Once the public review period is closed, a final EIR (FEIR) will be prepared. The FEIR will consist of this EIR, all comments on this EIR, responses to those comments, and any revisions to the text of this EIR. The FEIR will be considered by the Sonoma County Planning Commission. When the Planning Commission considers the EIR complete and accurate, it will recommend that the Board of Supervisors certify the document and will make a recommendation on whether to approve the project. The Board of Supervisors will then consider certification of the EIR. The FEIR must be certified before any action on the project can occur. If the project is approved, a notice of determination will be filed with the State Clearinghouse of the Governor's Office of Planning and Research and with the Sonoma County Clerk.

Section 15091 of the State CEQA Guidelines requires the Board of Supervisors to find for each significant impact of the project that (1) changes in the project would reduce the impact to a level that is less than significant, (2) such changes are within the jurisdiction of a public agency other than the County, or (3) mitigation measures and alternatives are infeasible. If the project would cause impacts that the County determines cannot be mitigated to a less-than-significant level, the Board of Supervisors would be required to adopt a statement of overriding considerations (under Section 15093 of the State CEQA Guidelines) that describes how benefits of the project outweigh those impacts.

1.4 PROJECT LOCALE AND SETTING

PROJECT LOCATION

Syar proposes instream gravel mining within the Russian River within a section of the Alexander Valley reach in Sonoma County. The Alexander Valley reach extends from the confluence of Big Sulphur Creek near Cloverdale to the Jimtown Bridge. The proposed mining reach includes approximately 6.5 miles of river (upstream bar to downstream bar) at the southern extent of the Alexander Valley reach, and is generally located southeast of Gill Creek and northwest of the Jimtown Bridge. The mining reach extends from River Mile (RM) 47.5 to RM 54 and is contained in the U.S. Geological Survey (USGS) 7.5-minute Jimtown and Geyserville Quadrangles. The study area for this EIR is defined as the river segment extending from RM 46 to RM 55, from the Jimtown Bridge to just upstream of the proposed mining reach. Figure 1-1 shows the location of the study area in the context of its regional vicinity. Figures 1-2 through 1-4 provide more detail of the study area in its local surroundings.

Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
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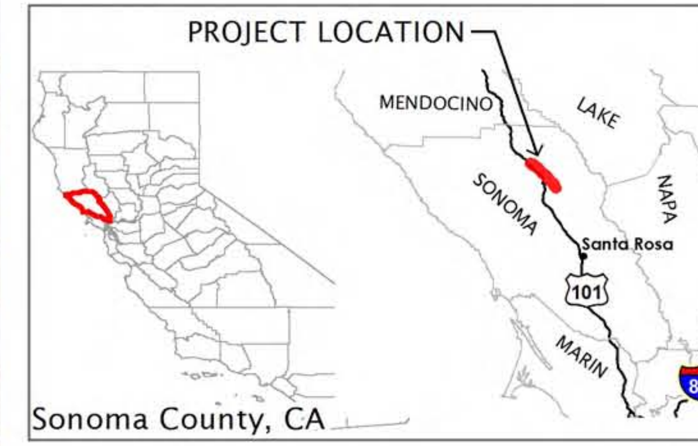

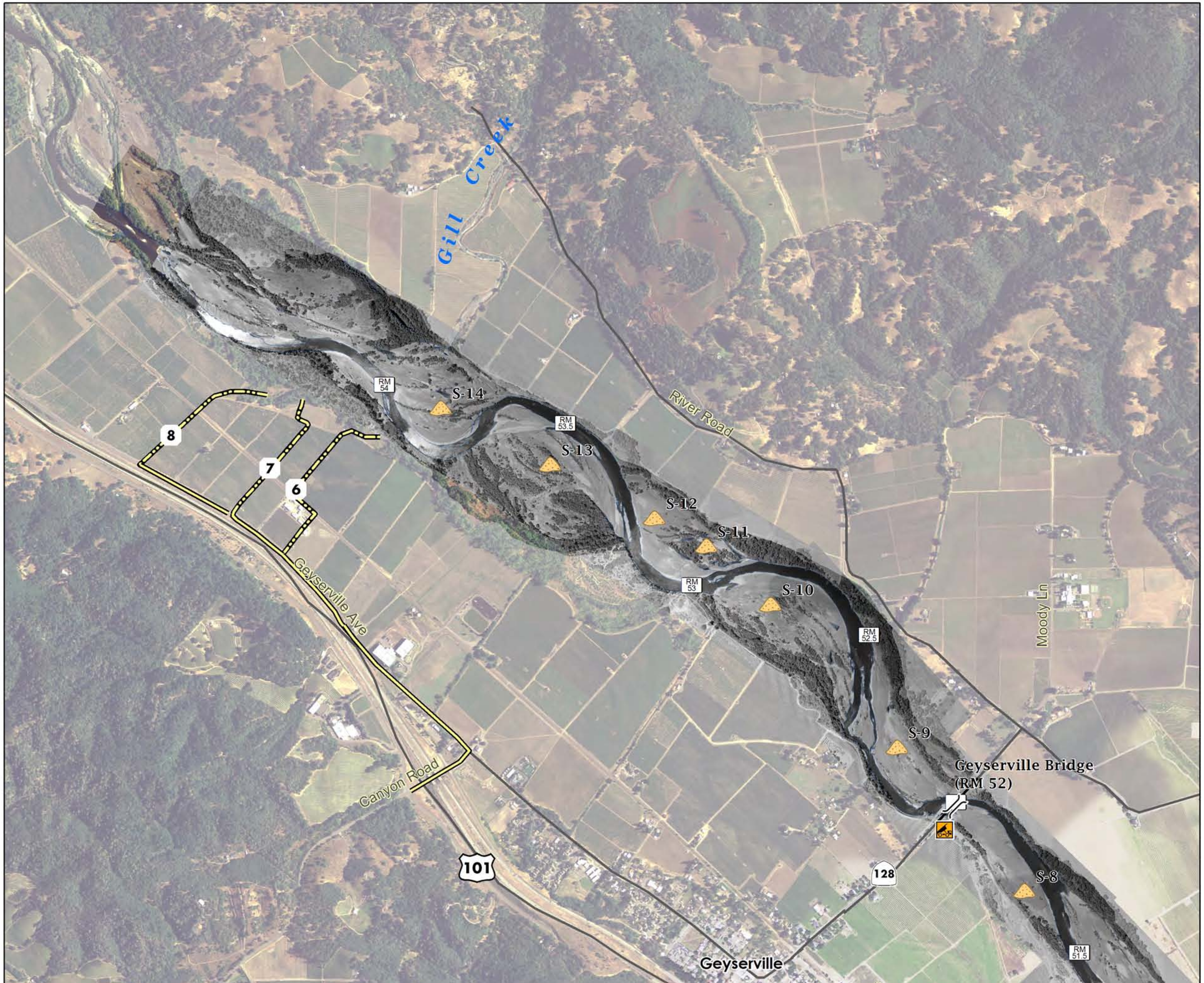

Figure 1-2
Gravel Bar Location Map: Reach 1

- Gravel Bars
- Staging Area
- Public Access Roads
- Private Access Roads
- Russian River Course (May 2006)
- RM ## River Mile Marker
- Main Roads

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

0 1,250 2,500 Feet

Source: Syar Industries inc. EDAW.
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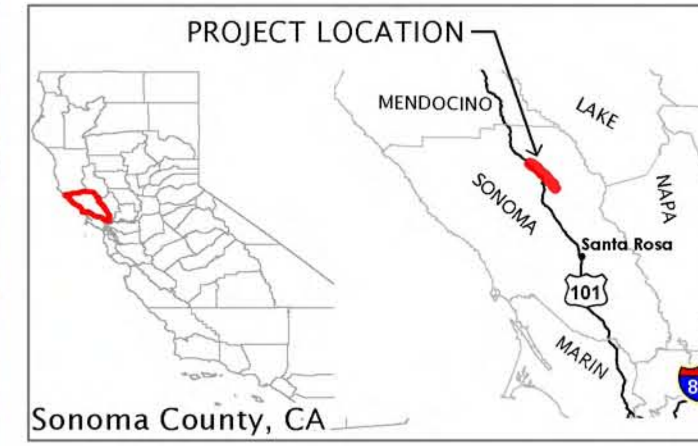

Figure 1-3
Gravel Bar Location Map: Reach 2

- Gravel Bars
- Staging Area
- Public Access Roads
- Private Access Roads
- Russian River Course (May 2006)
- RM ## River Mile Marker
- Main Roads

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

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Source: Syar Industries inc. EDAW.
Projection State Plane NAD 1983 California II

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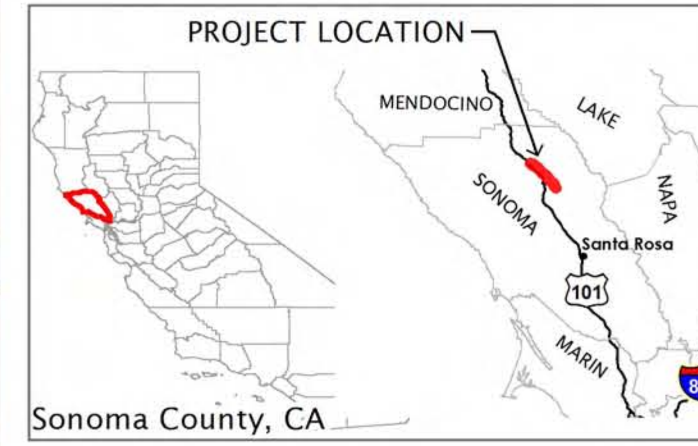
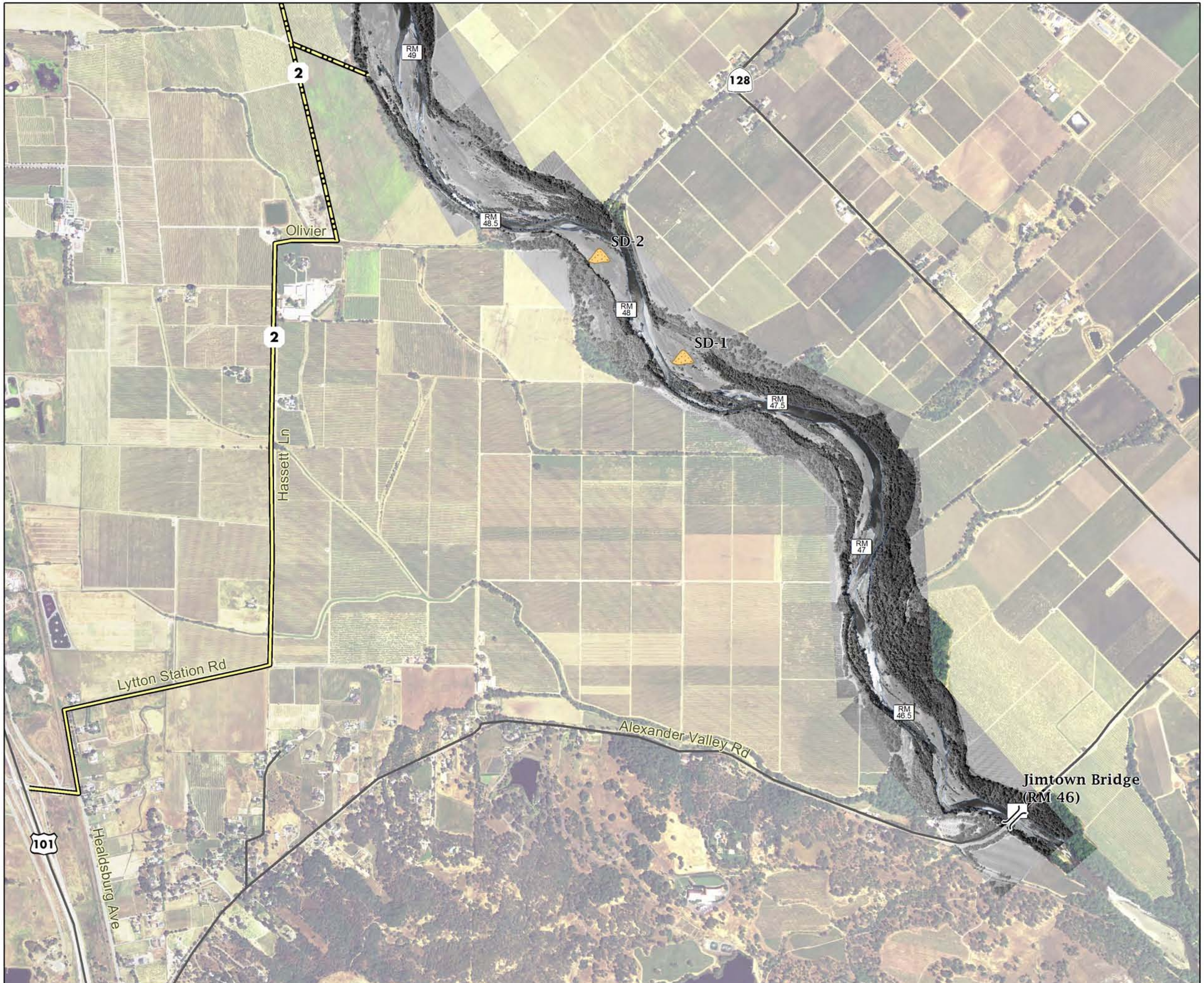


Figure 1-4
Gravel Bar Location Map: Reach 3



- Gravel Bars
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- Russian River Course (May 2006)
- River Mile Marker
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Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

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Source: Syar Industries inc. EDAW.
Projection State Plane NAD 1983 California II

The southern, or downstream, portion of this reach contains an area previously permitted for instream gravel bar mining by DeWitt Sand and Gravel under lease agreements with the property owners. The DeWitt mining permit expired in 2007. Syar has acquired lease agreements with the property owners along this portion of the reach that allow Syar to skim gravel from the bars. Gravel bars in this previously permitted area are identified with a prefix of "SD," rather than "S," which has been designated for the other areas of the project reach.

The mining area would be located entirely within private property. This area is currently designated Land Intensive Agriculture (LIA) or Resource and Rural Development (RRD) in the *Sonoma County General Plan*. All the parcels proposed for mining have been designated in the ARM Plan for instream mining and zoned with a Mineral Resource Combining District.

PHYSICAL SETTING

The Russian River watershed is comprised of 1,485 square miles of drainage in Mendocino, Sonoma, and Lake Counties (Coey et al. 2002). The river is bordered to the west by the Coast Ranges and is approximately 110 miles long. The Russian River traverses 69 miles, flowing from its headwaters in Redwood and Potter Valleys north of Ukiah southeastward to the city of Healdsburg and then another 41 miles westward to the Pacific Ocean at the town of Jenner. The Alexander Valley area of this watershed is composed of hills and a wide floodplain consisting largely of rural and agricultural areas dominated by vineyards. The 6.5-mile reach of the Russian River where gravel bars are proposed to be mined is surrounded by vineyards, riparian vegetation, and scattered rural residential sites. Properties abutting the areas proposed to be mined range in size from 7 acres to about 305 acres.

The area has a Mediterranean climate, characterized by warm to hot summers and mild winters, with annual rainfall from 22 to 80 inches and an average of 41 inches occurring mainly in the months of November through March (SEC 1996). Over 80% of watershed runoff occurs December through March (Rantz and Thompson 1967). The average annual runoff for the entire Russian River basin is approximately 1,600,000 acre-feet at Guerneville. Summer flows in the upper Russian River in the project reach are heavily influenced by releases from Coyote Dam at Lake Mendocino (SCWA 2002).

Access to the mining area is from U.S. Highway 101 (U.S. 101) to the primary roads running parallel to the Russian River along the west side of the Alexander Valley, and then along private farm roads to the gravel bars (see Figures 1-2 through 1-4). Specific roads identified for access to the site include Geyserville Avenue, Canyon Road, Hamilton Lane, Banti Lane, Bill Ferguson Road, Healdsburg Avenue, Lytton Station Road, Olivier Road, and Hassett Lane. State Route (SR 128), River Road and private roads would be used for access to River Enhancement Plan (REP) activity areas and to a staging area located adjacent to the Geyserville Bridge, but not as haul routes. Chapter 3.6 "Traffic and Circulation" further describes the access routes and their use.

ALEXANDER VALLEY REACH GRAVEL MINING HISTORY

The Russian River within the Alexander Valley has been subject to bar skimming operations for almost 100 years. These operations have been intermittent, occurring when gravel has accumulated on the river bars following winter storms that produced high flows and transported large volumes of sand and gravel. Studies done in conjunction with the adoption of the 1994 ARM Plan found that within the Alexander Valley reach of the Russian River, gravel recharges at an average rate of approximately 200,000 cubic yards (300,000 tons) per year. The specific rate of natural recharge fluctuates depending on the level of high flows during each winter and availability of material upstream of the study area (Kondolf 1997). The gravel bars proposed for mining as part of this project have all been mined previously by various companies. DeWitt Sand and Gravel most recently skimmed three bars in the mining reach (identified with the prefix of “SD”) in 1999. Another operator currently has a mining permit to skim bars approximately 5 miles upstream of the study area.

1.5 PROJECT DESCRIPTION

PROJECT PURPOSE

The project’s primary purpose is to mine gravel bars in the Alexander Valley reach of the Russian River to produce a sustainable yield of aggregate, while simultaneously implementing enhancement proposals to improve aquatic habitat. This would be accomplished through implementation of an adaptive management strategy (AMS), in which annual mining plans and enhancement components are reviewed and authorized by PRMD in consultation with its Scientific Review Consultants (SRC)[1] and resource agencies. The proposed AMS would allow annual adjustment of extraction methods and enhancement activities at the beginning of each operating season based on annual monitoring and performance criteria (the AMS is described in detail later in this chapter). Syar requests a 15-year permit, which would require an amendment to the ARM Plan and SMARO to increase the permit life from 10 years. ARM Plan and SMARO amendments are also required to permit mining and enhancement activities in a different manner than currently allowed by the ARM Plan/SMARO.

Syar's initial application sought to mine up to eight gravel bars it identified in the Alexander Valley reach of the Russian River. After conducting further study, Syar amended its application on June 9, 2006, to identify 15 existing bars, all within the same reach of the river. This EIR analyzes the impacts of mining any bar within the reach based on an AMS. Syar proposes to mine up to four bars per mining season, although only one would be mined at a time. River Enhancement Plan activities may occur simultaneously in other areas in the reach. The bars mined in a given season, and the specific amount of aggregate mined on each bar, would be determined through annual review and authorization by PRMD in consultation with its Scientific Review Consultants (SRC) and resource agencies utilizing the AMS process.

PROJECT OBJECTIVES

The objectives of the proposed project include:

- Produce aggregate from an ARM Plan designated site to implement the state and County policies of meeting local aggregate demand with local resources.
- Extend the life of permits for locally-produced sources of high-quality aggregate that meets specifications for use in local infrastructure projects.
- Manage the skimming approach on an ongoing basis to provide a sustainable yield of aggregate while enhancing the biological and hydrological functions of the Russian River.

[1] The SRC is an independent consulting firm retained by PRMD to review annual mining monitoring reports and offer independent advice and technical expertise on scientific and technical issues relating to mining operations. Entrix is currently acting as the SRC.

- Conserve valuable agricultural lands and help protect public infrastructure by maintaining flood channel capacity and reducing bank erosion through the removal of excess aggregate from gravel bars.
- Conserve quality riparian habitat, enhance fisheries, and remove invasive plant species by utilizing unique skimming techniques in selected locations.
- Avoid traffic, air quality, and other environmental impacts associated with importing aggregate from locations outside of Sonoma County.

MINING OPERATIONS

Overview

Syar proposes to extract sand and gravel within the Alexander Valley reach of the Russian River within a proposed 15-year use permit period. Mining operations would consist of transplanting of large riparian vegetation, relocation of any large woody debris (LWD) that have accumulated in areas where mining would occur, removal of giant reed (*Arundo donax*) in the mining area,, installation of river crossings, skimming (i.e., excavation and loading of sand and gravel) activities, salvage and reuse of soil, and removal of crossings and equipment at the end of each mining season. Mining would involve the use of mechanical equipment and would be limited to non-wetted areas. The project includes the loading of sand and gravel onto trucks and hauling to Syar's Healdsburg processing facility.

Syar proposes additional project restoration activities as described in the *Russian River—Alexander Valley River Enhancement Plan for Syar Industries Reach* (Syar 2008) (River Enhancement Plan or REP). The purpose of the REP activities is to enhance river habitat and ecological conditions. Generally, the REP calls for the construction or enhancement of oxbows and alcoves and riparian forest planting. Additional and optional programmatic enhancements in the REP include additional riparian forest planting, bioengineered streambank stabilization, excavation of floodplain benches or inset terraces, placement of large woody debris (LWD), removal of invasive species (*Arundo donax* - giant reed), and salmonid habitat enhancements in the lower reaches of tributary streams. These activities are described in detail below.

Syar proposes gravel mining operations on any of the gravel bars located along both sides of a 6.5-mile stretch of the Russian River extending between River Mile 47.5 and River Mile 54, southeast of Gill Creek and northwest of the Jimtown Bridge (see Figure 1-1). The mined sand and gravel has minimal organic content, and as such is appropriate material for Portland Cement Concrete and other high-end product uses. Mining would occur on bars that Syar owns, or on bars for which Syar has obtained permission from the property owners. The primary extraction method proposed is the horseshoe skim. Skimming would involve the use of mechanical equipment to excavate aggregate material in a horseshoe shape with an outlet at the downstream end of the bar connecting to the low-flow channel. The horseshoe skim area is defined by the buffers at the head of the bar, side bar and outer banks. At the end of each mining season equipment would be removed from the river.

Sand and gravel would initially be extracted from the accumulated storage on the bars within the reach that has been deposited over the last 15 years. Once each bar has been mined initially, sand and gravel would be extracted on a sustained yield basis, with precise quantities determined following an annual evaluation of the natural gravel recharge resulting from winter high flows. Syar proposes to mine the bars in a phased manner so that the skimming of the bars would occur on an approximately 6-year cycle over the proposed 15-year life of the use permit.

The phasing was developed to produce an average of 300,000 tons of sand and gravel annually. The maximum tonnage mined in any given year would be 350,000 tons. However, it is possible that some bars would require multiple years to mine as their size exceeds 350,000 tons. Up to four bars could be skimmed in one season, with mining occurring at only one bar at any given time. The total area proposed for mining on 8 bars in the initial phase is approximately 110 acres, yielding an estimated 1.9 million tons over a 6 year period. Syar proposes a mining season of June 1 to November 1, except for bars requiring access via temporary bridges, which would be mined from June 15 to October 15 only.

Syar conducted a site-specific analysis of the depositional characteristics of the Russian River segment proposed for mining as part of the mining and reclamation plan (Syar 2006). Syar interpreted aerial photographs and conducted relevant field surveys to determine the size and mass of gravel along the project reach. Based on this analysis, Syar identified certain bars to be skimmed during the first 6-year cycle, including Bars SD-4, SD-5, S-4, S-7, S-8, S-9, S-13, and S-14 (see Table 1-1 and Figures 1-1 through 1-4). Syar selected these bars because they have been identified as depositional areas, or as areas with lateral erosion issues. Syar may mine the remaining seven bars (SD-1, SD-2, S-5, S-6, S-10, S-11, and S-12), or other unspecified bars within the project reach, in future cycles. The schedule for mining gravel bars may change if, through the Adaptive Management Strategy (AMS) process, PRMD determines that a change is necessary to meet river management goals (e.g., improving aquatic habitat, decreasing lateral erosion or bank loss, removing exotic invasive vegetation, protecting existing infrastructure, or maintaining or restoring channel flood capacity).

The sequence proposed for the mining of gravel bars is tentative and would depend on the conditions of the bars, which would be analyzed and confirmed annually before mining operations as part of the AMS. The configuration of the gravel bars and the amount of available deposits for extraction may vary each year based on the previous winter flows and the resultant accumulation and location of aggregate materials.

In addition to the flexibility in the extraction volume and mining sequence of the gravel bars, the methods for the operating season would be determined by the AMS. Syar would be required to prepare and submit annual mining plans to PRMD, the Scientific Review Consultants, and the resource agencies, and make any final modifications before start of mining.

Mining Activities

Mining activities would consist of a series of steps as detailed below:

- *Relocation of LWD:* Syar would remove any large woody debris from the skimming area before the skim and place it in the upper bar buffer area so it could be redistributed during winter high-flow events. Skimming activities would not generate new LWD.
- *Removal of giant reed:* Syar would remove giant reed in active skimming and access road areas. Syar would remove giant reed in accordance with the Sotoyome Resource Conservation District (Sotoyome RCD) Giant Reed (*Arundo donax*) Removal and Riparian Habitat Restoration in the Russian River Watershed Program. Specific removal techniques would be tailored to specific sites in consultation with California Department of Fish and Game (DFG) and the Sotoyome RCD. Removal would generally consist of cutting the giant reed approximately 12 inches from the ground. The cut reed would be treated using one or more of the following methods: tarping of the cut areas (used only in areas where inundation would not occur), physical removal of the roots (by hand or equipment, or as part of the mining activities), or by applying approved herbicides (e.g.,

glyphosate) to the giant reeds, immediately after cutting. Where appropriate, Syar would plant native vegetation on sites where the giant reed has been removed.

Table 1-1
Characteristics of Bars Tentatively Proposed for First Cycle of Mining Operations

Bar	APN	Parcel Size (ac)	Proposed Skimming Area (ac)	Quantity (cy)	Quantity (tons)
S-14	141-190-056	52.2	6.7	89,681	134,522
S-13	141-190-056 141-190-059	52.2 35.5	19.1	235,230	352,845
S-9	140-230-037 140-080-016	81.8 136.2	8.6	109,287	163,931
S-8	140-080-016	136.2	19.4	272,426	408,639
S-7	140-080-016	136.2	17.0	130,422	195,633
S-4	140-060-002 131-050-004	150.8 304.7	21.0	180,437	270,656
SD-5	131-050-004	304.7	4.3	187,630	281,445
SD-4	131-050-004 131-060-024	304.7 64.6	13.9	50,189	75,284
			110.0	**1,255,302**	**1,882,953**

Note: ac = acres; APN = assessor's parcel number; cy = cubic yards. Mining would be limited to a maximum of 350,000 tons per year. The phasing of mining operations is subject to change based on the AMS.
Source: Syar 2008

- *Transplanting activities:* Syar would transplant stands of living, native riparian vegetation from the proposed skimmed areas to the high bank and head of the bars before and in conjunction with skimming operations on each bar. Syar would monitor the vegetation on an ongoing basis in consultation with PRMD, DFG, and National Marine Fisheries Service (NMFS). Syar would supplement the transplanting approach with pole plantings[2] and other methods if determined necessary through the Adaptive Management Strategy (AMS) process. In some cases, DFG and/or the AMS process may identify large stands of mature trees as important and require their maintenance on-site. Vegetation that is not transplanted (weeds, nonnative species) and debris would be disposed of off-site.
- *Skimming activities:* The skimming methods are described below under "Mining Methods." Syar would use earthmoving equipment to skim aggregate material from the gravel bars and push it into temporary piles. Syar would load the aggregate into haul trucks for transport to its aggregate processing plant in the city of Healdsburg.

[2] Pole planting is the planting of either willows or cottonwoods. Pole cuttings (4-foot-long branches), harvested from living trees, are trimmed and planted directly in the ground. These cuttings will sprout roots and stems without additional facilitation.

- *Removal of equipment:* At the end of each operating season, Syar would load the equipment onto trailers and haul it back to the Syar aggregate processing plant or to other Syar facilities.

Mining Methods

The typical skimming configuration and cross sections for the mining methods and vegetation management at the gravel bars are shown in Figures 1-5 through 1-7. Conceptual mining plans for each of the eight bars proposed for mining in the first six years are shown in Figures 1-8a through 1-8h. Syar would select the appropriate mining method(s) at the proposed bar(s) at the beginning of each season based on the AMS.

Horseshoe Skim

Horseshoe skimming would be the primary extraction method as shown in the Conceptual Mining Plans (Figures 1-8a through 1-8h). This method is intended to maintain the hydrologic processes that maintain aquatic habitat during the dominant discharge and reduce lateral bank erosion by removing built-up gravel from the middle of the bar so that high flood flows run parallel to the banks. The horseshoe skim area is defined by the proposed buffers for the head of bar, side bar and outer banks with an outlet at the downstream end of the bar connecting to the low-flow channel as shown in Figure 1-5. Proposed buffers are as follows:

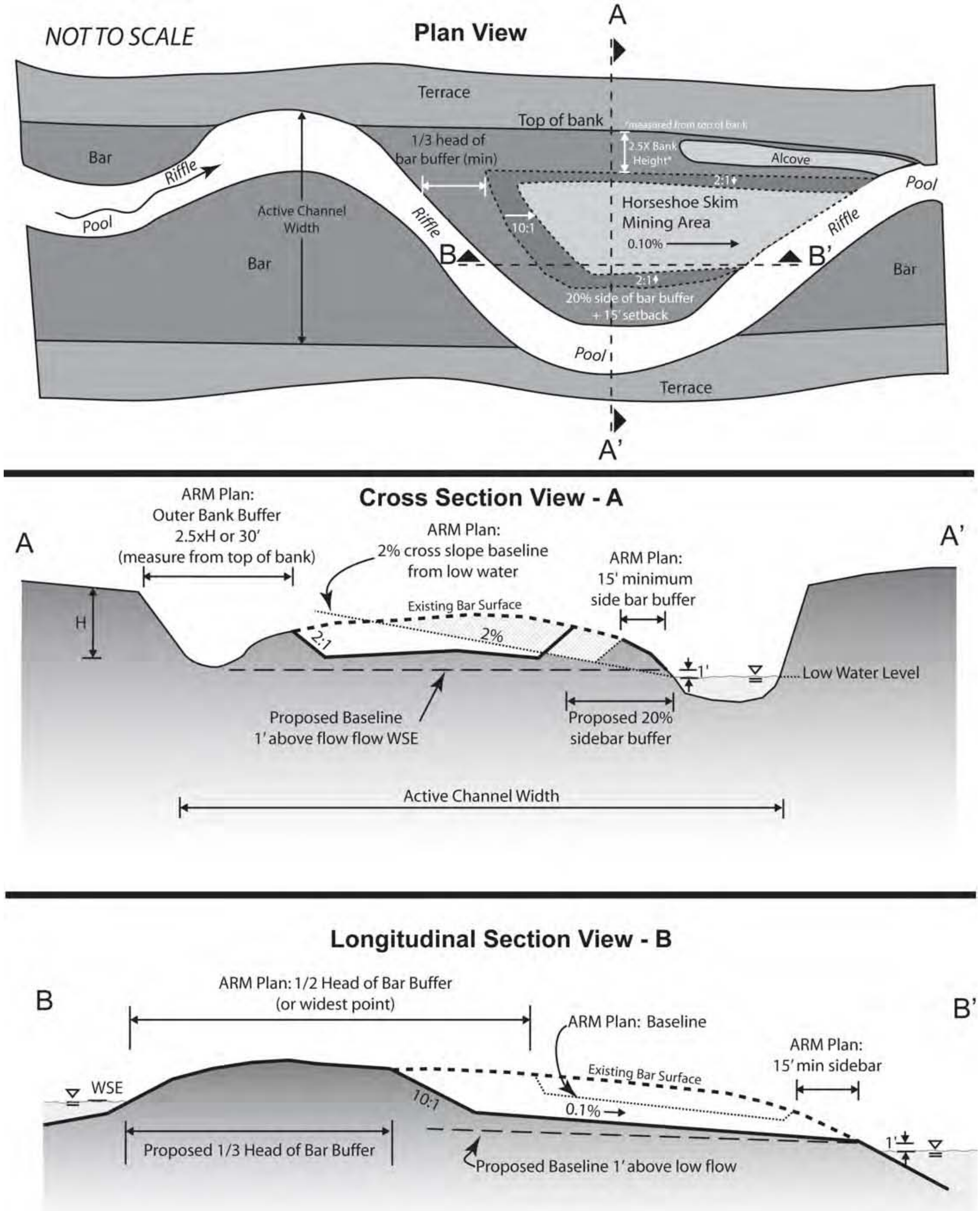
- Head of Bar Buffer: upper 1/3 of the bar length;
- Side Bar Buffer: 20 percent of the active channel bed width (bar width plus the low-flow channel); and,
- Outer Bank Buffer – 2.5 times the height of the bank or 30, feet whichever is greater, measured from the top of the outer bank.

Before skimming, Syar would remove clusters of native riparian vegetation from the area to be skimmed, and transplant them, along with pole plantings, to the high banks and head of the gravel bar to provide additional protection against bank erosion during winter high flows. Once the vegetative clusters have been removed from the downstream two-thirds of a gravel bar, and buffers are maintained at the upper third and outer edge of the bar, Syar would skim the downstream two-thirds of a gravel bar (see Figure 1-5). Cut slopes along the interior sides of the skimmed area would remain at a 2:1 ratio (i.e., horizontal:vertical), while the cut slopes at the upper (upstream) end of the skimmed area would be left at a 10:1 ratio as shown on Figure 1-6. The floor of the skimmed area would be established at 1 foot above the summer low-flow river level[3], with the downstream gradient equal to the river level. Figure 1-7 shows how Syar would manage gravel bar vegetation.

Figures 1-8 through 1-9 show the Conceptual Mining and Enhancement Plans for the eight bars proposed to be mined in the first six years. Syar proposes to mine Bar S-9 located just upstream of the Geyserville Bridge in the first year of mining including excavation of the adjacent floodplain terrace as an enhancement feature providing high-flow refugia for threatened and endangered fish as shown in Figure 1-10.

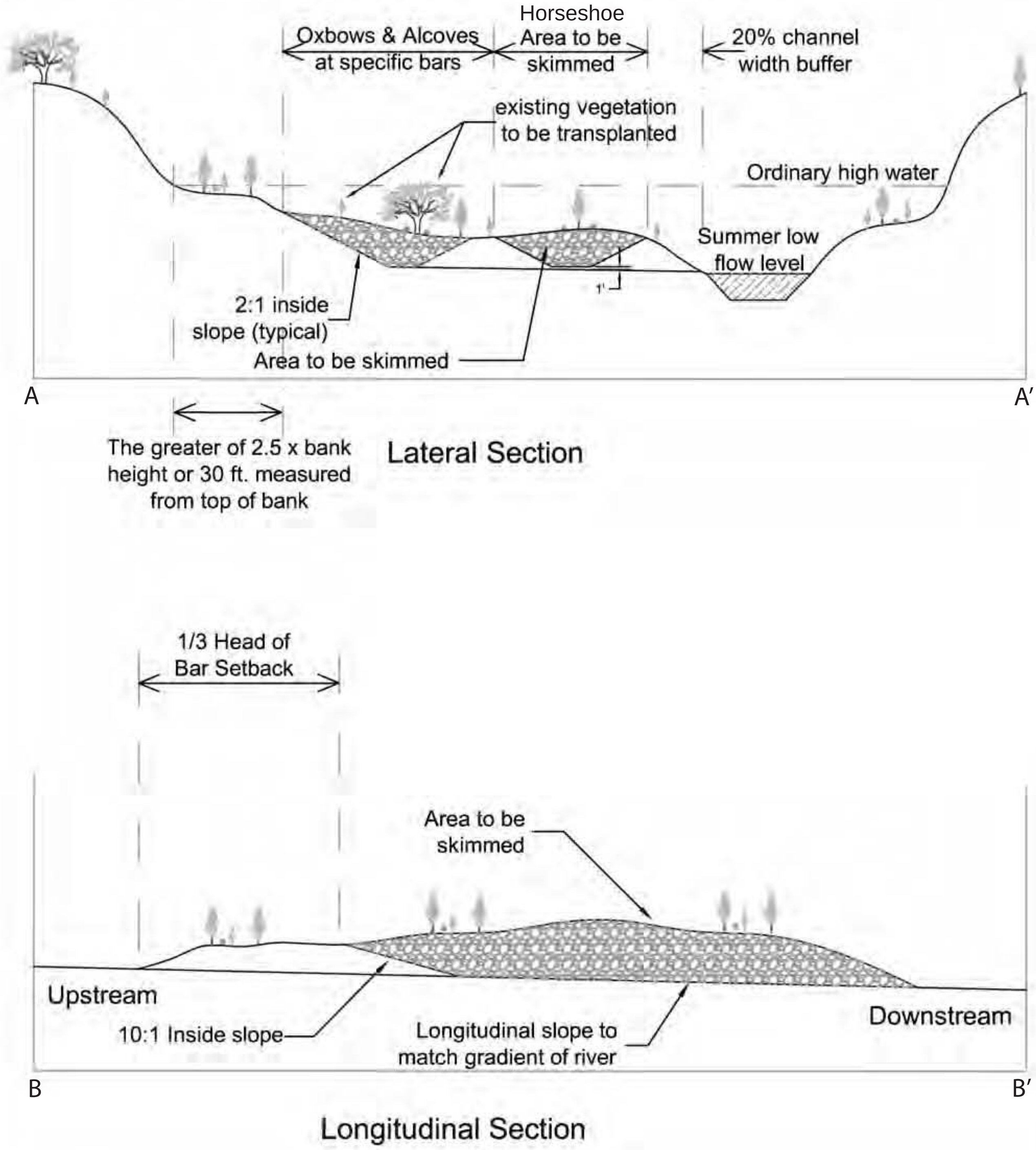
A more detailed mining plan with current topography, cross-sections and finished grades will be required for each bar in the year prior to mining.

[3] In the middle reach of the Russian River, the summer low-flow elevation corresponds to a 200 cubic feet per second (cfs) river flow, as defined by DFG. However, with the pending reductions in the summer flow volumes, DFG may change this definition.



Source: Syar (2010)
Note: please see Figure 1-6 for cross sections

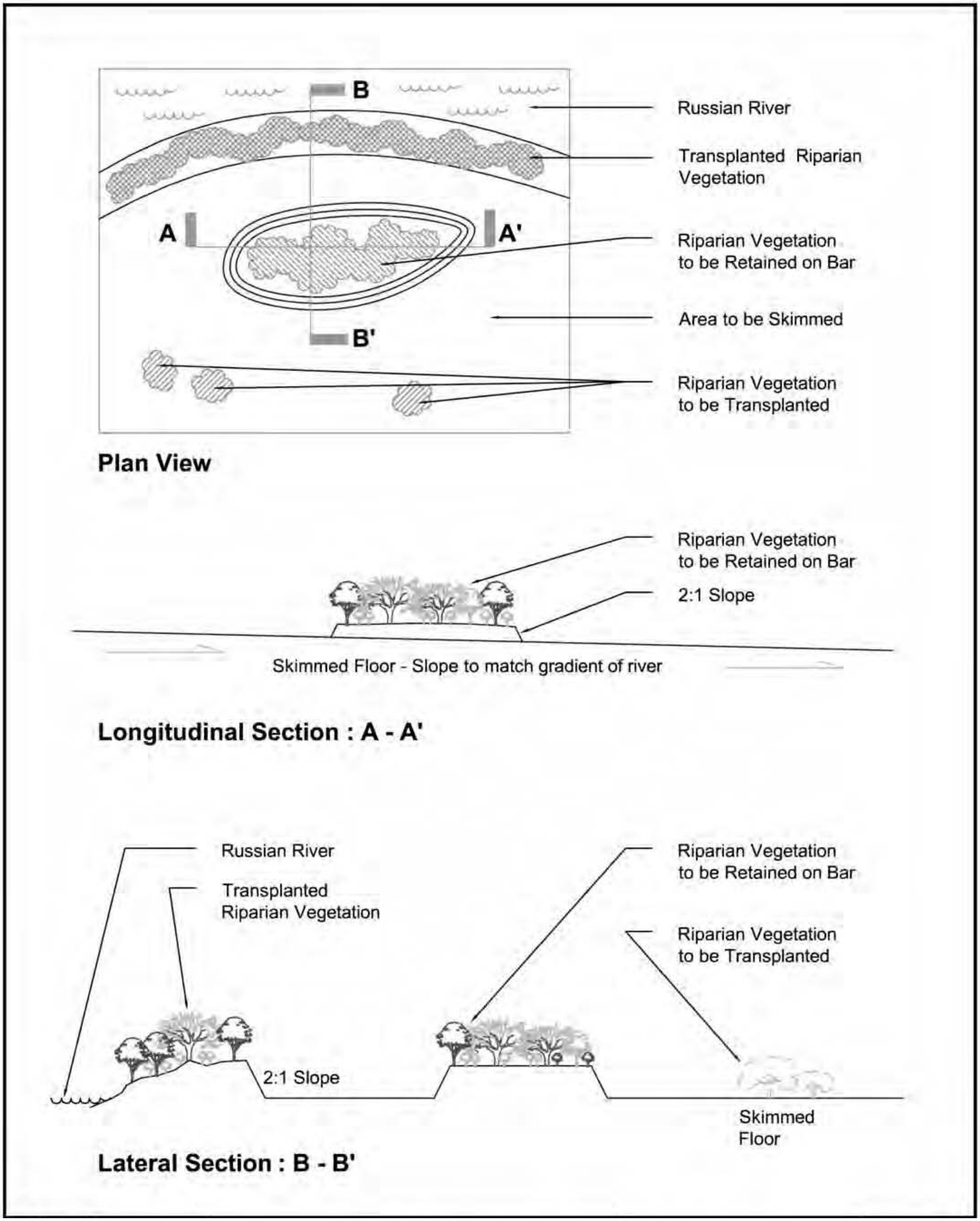
Figure 1-5
Proposed Change to ARM Plan Standards for Lower Alexander Valley Reach



Source: MCA/LSA, 2005

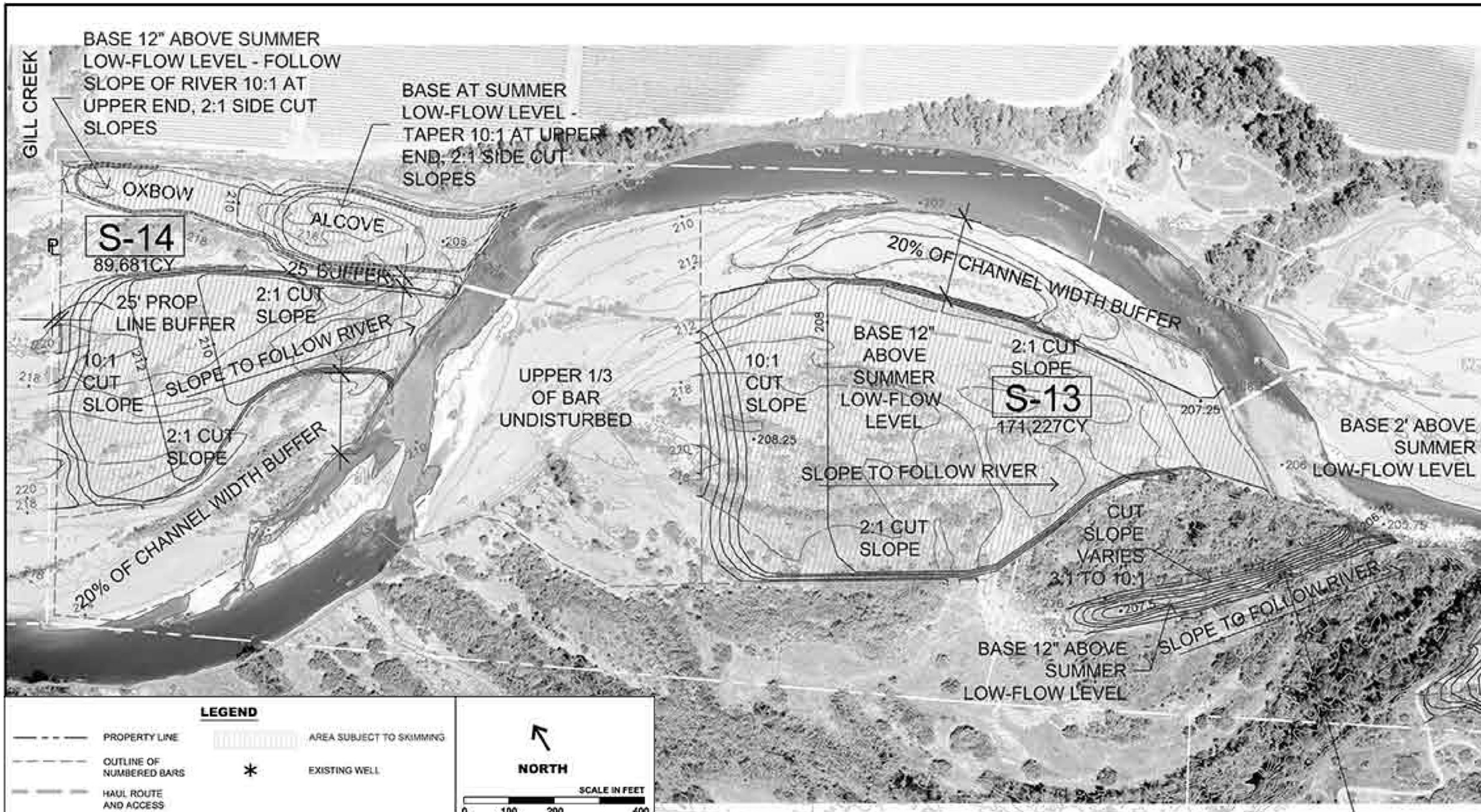
Figure 1-6

Typical Cross Sections



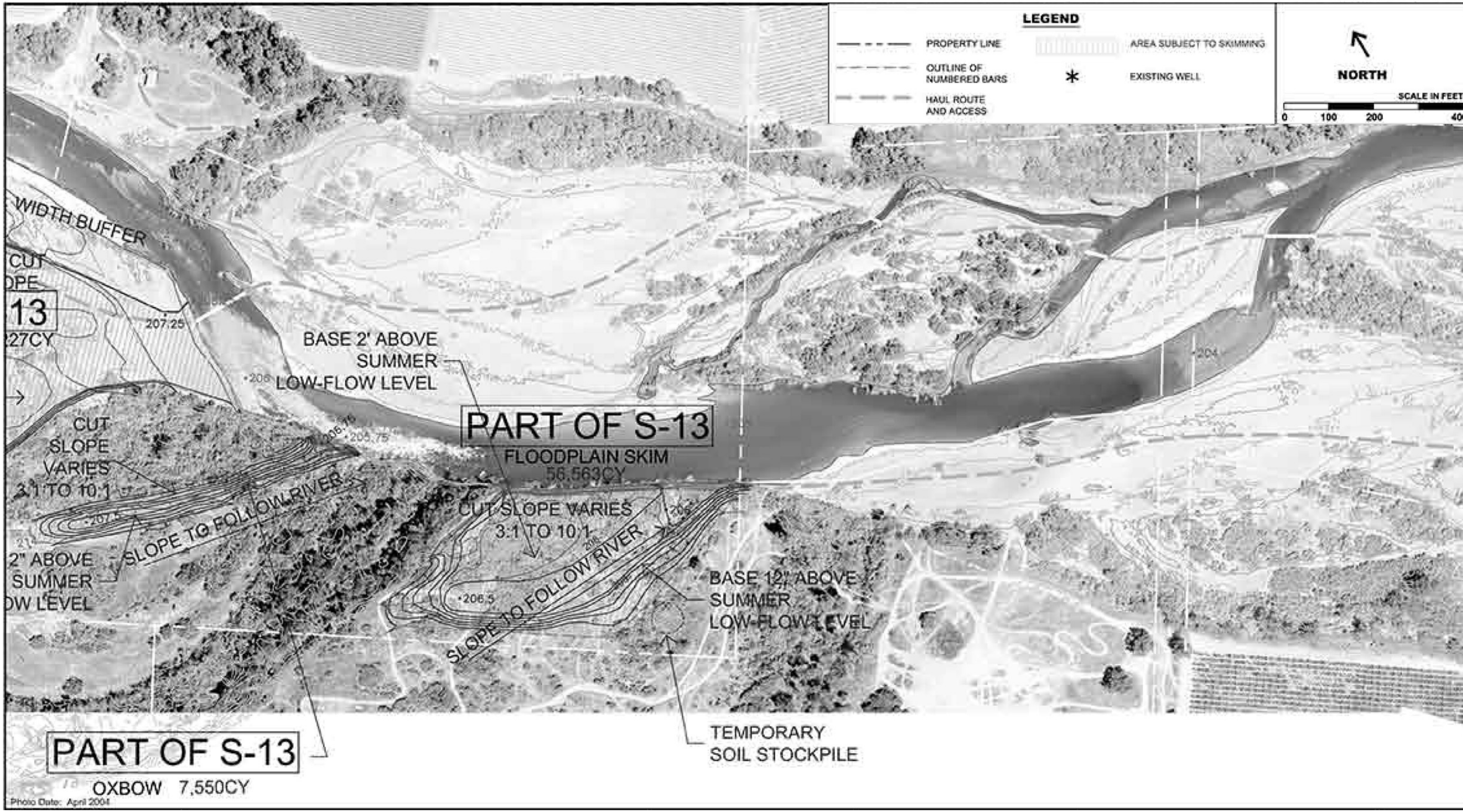
Source: MCA/LSA, 2005

Figure 1-7
Management of Gravel Bar Vegetation (Typical)



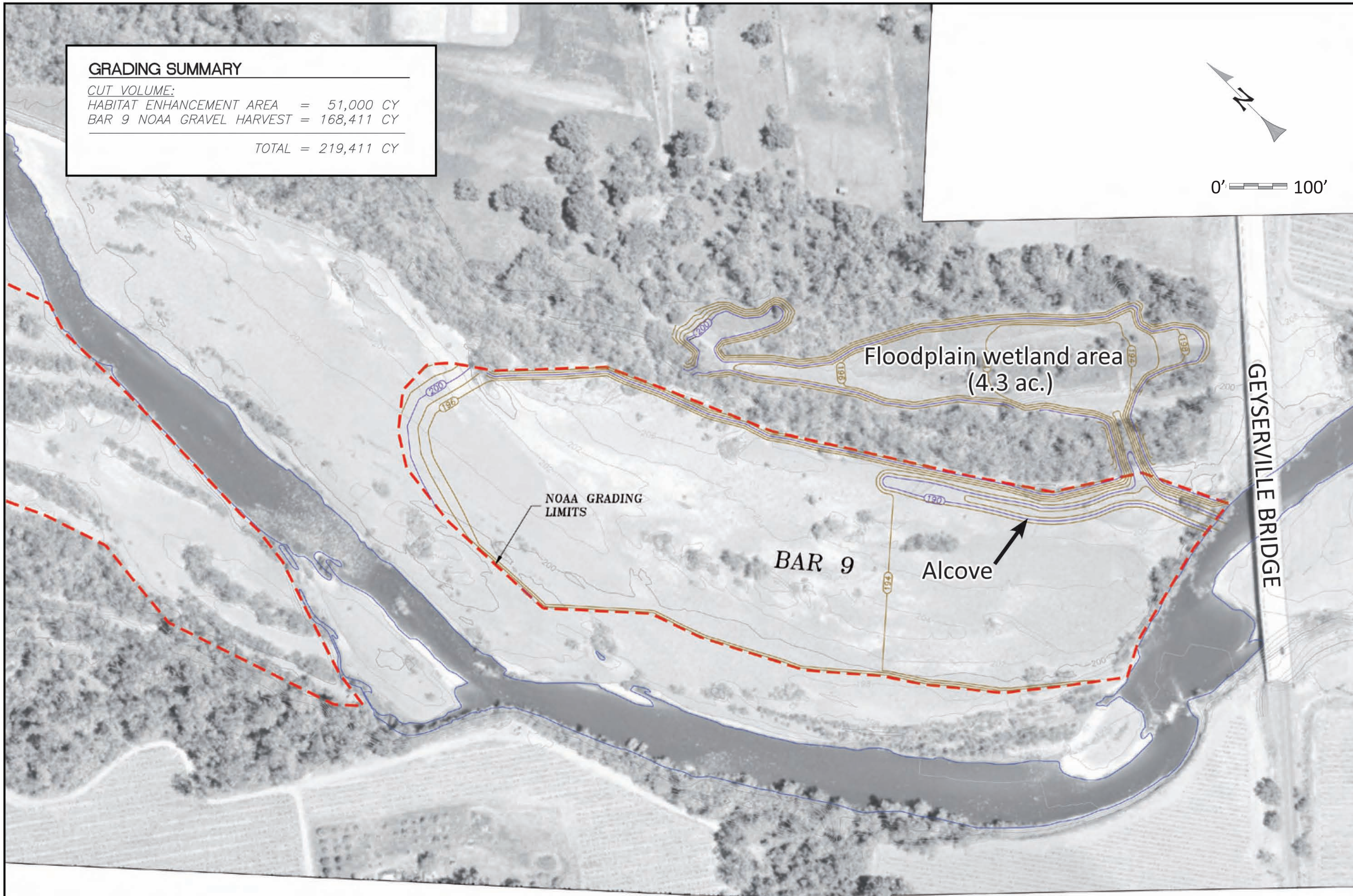
Source: Syar, Inc. (2008)

Figure 1-8a
Conceptual Mining and Enhancement Plan



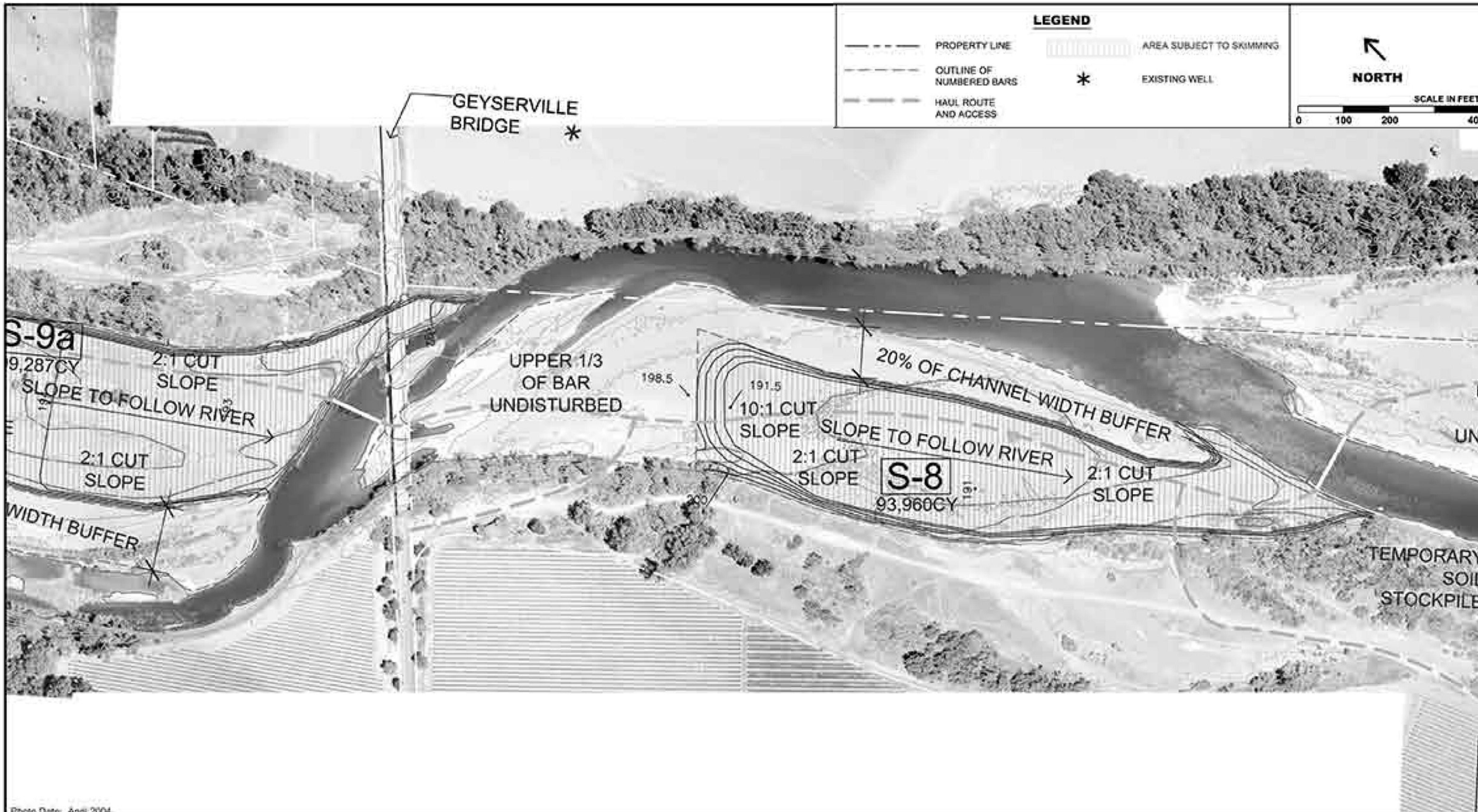
Source: Syar, Inc. (2008)

Figure 1-8b
Conceptual Mining and Enhancement Plan



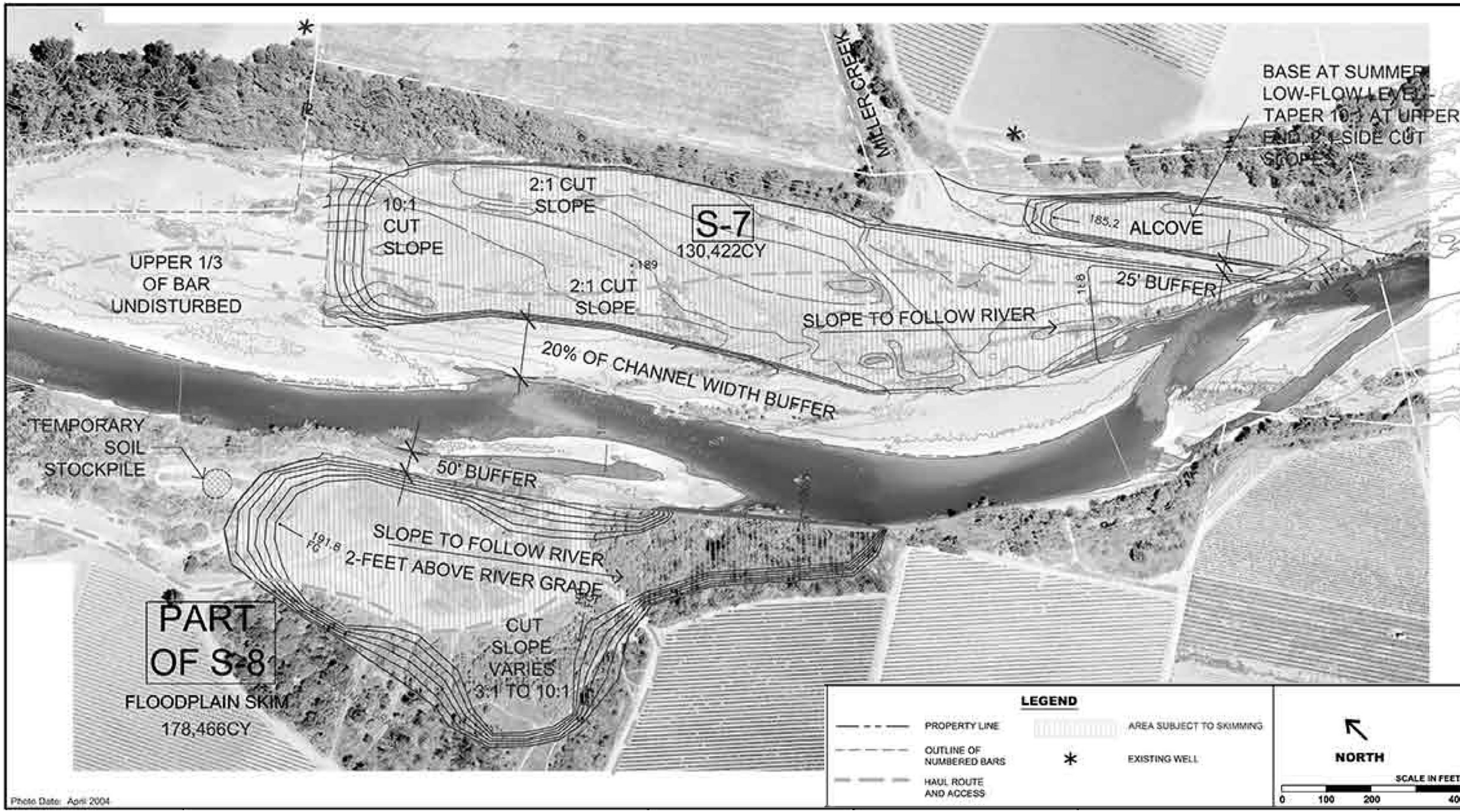
Source: Syar, Inc. (2008)

Figure 1-8c
Conceptual Mining and Enhancement Plan



Source: Syar, Inc. (2008)

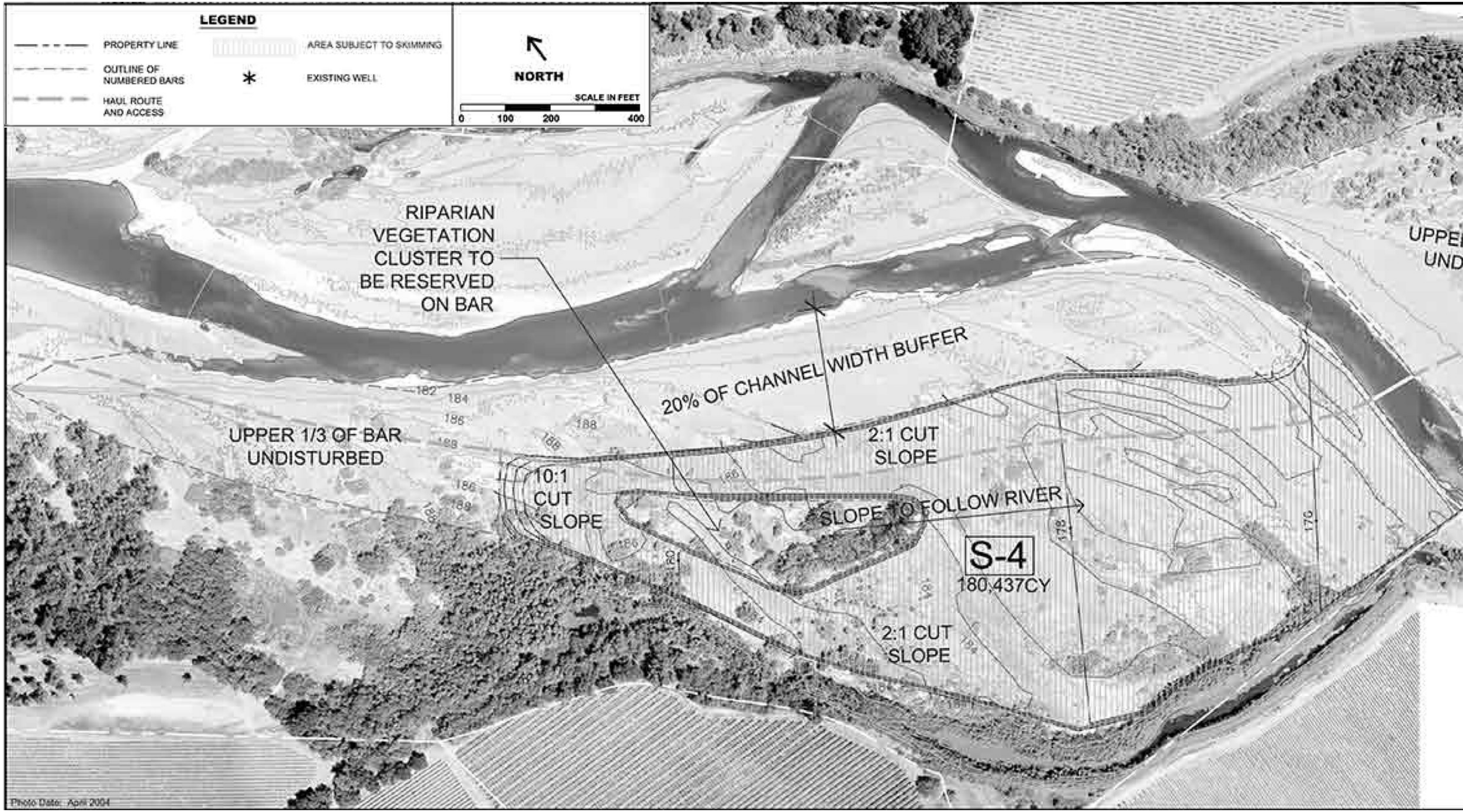
Figure 1-8d
Conceptual Mining and Enhancement Plan



Source: Syar, Inc. (2008)

Figure 1-8e

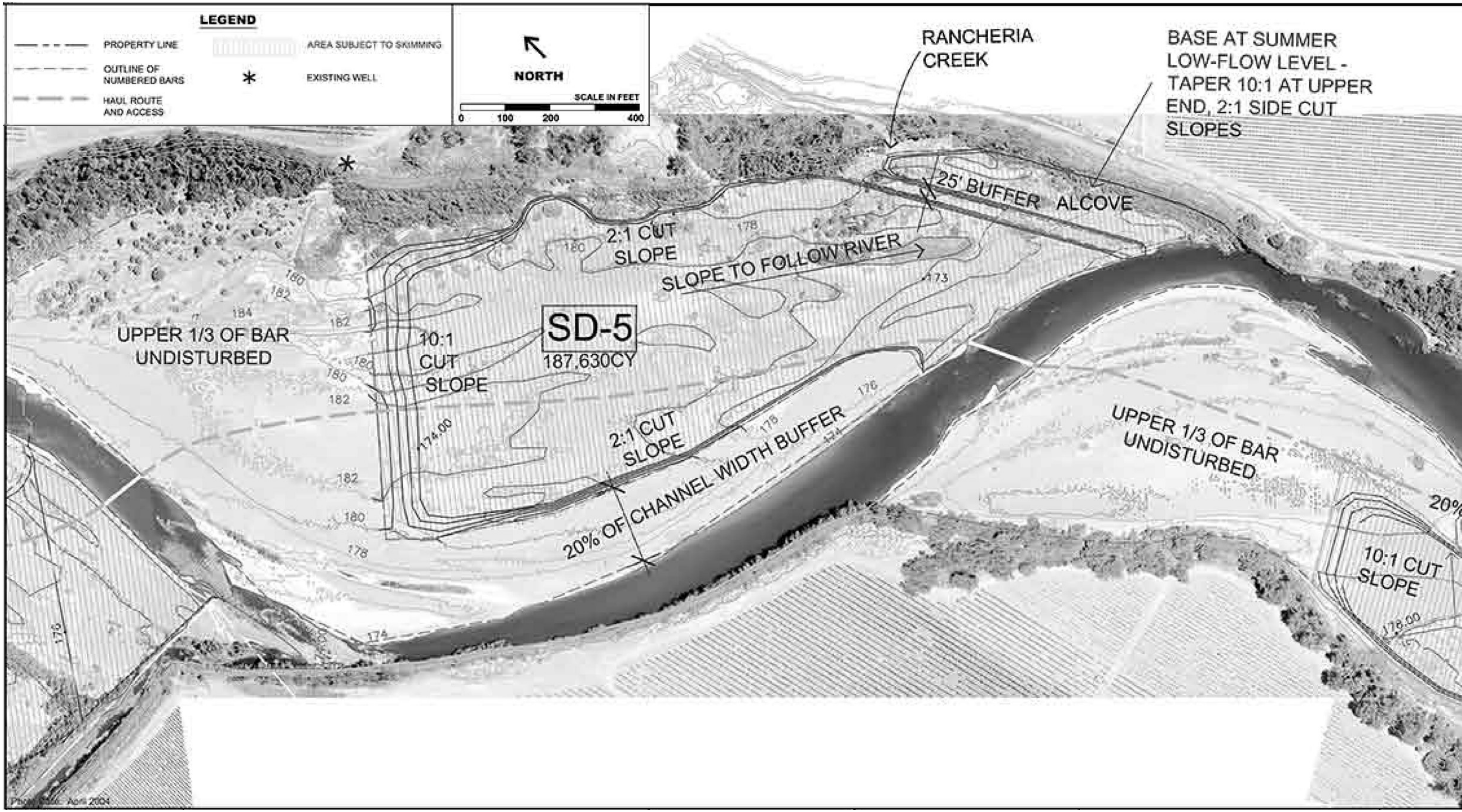
Conceptual Mining and Enhancement Plan



Source: Syar, Inc. (2008)

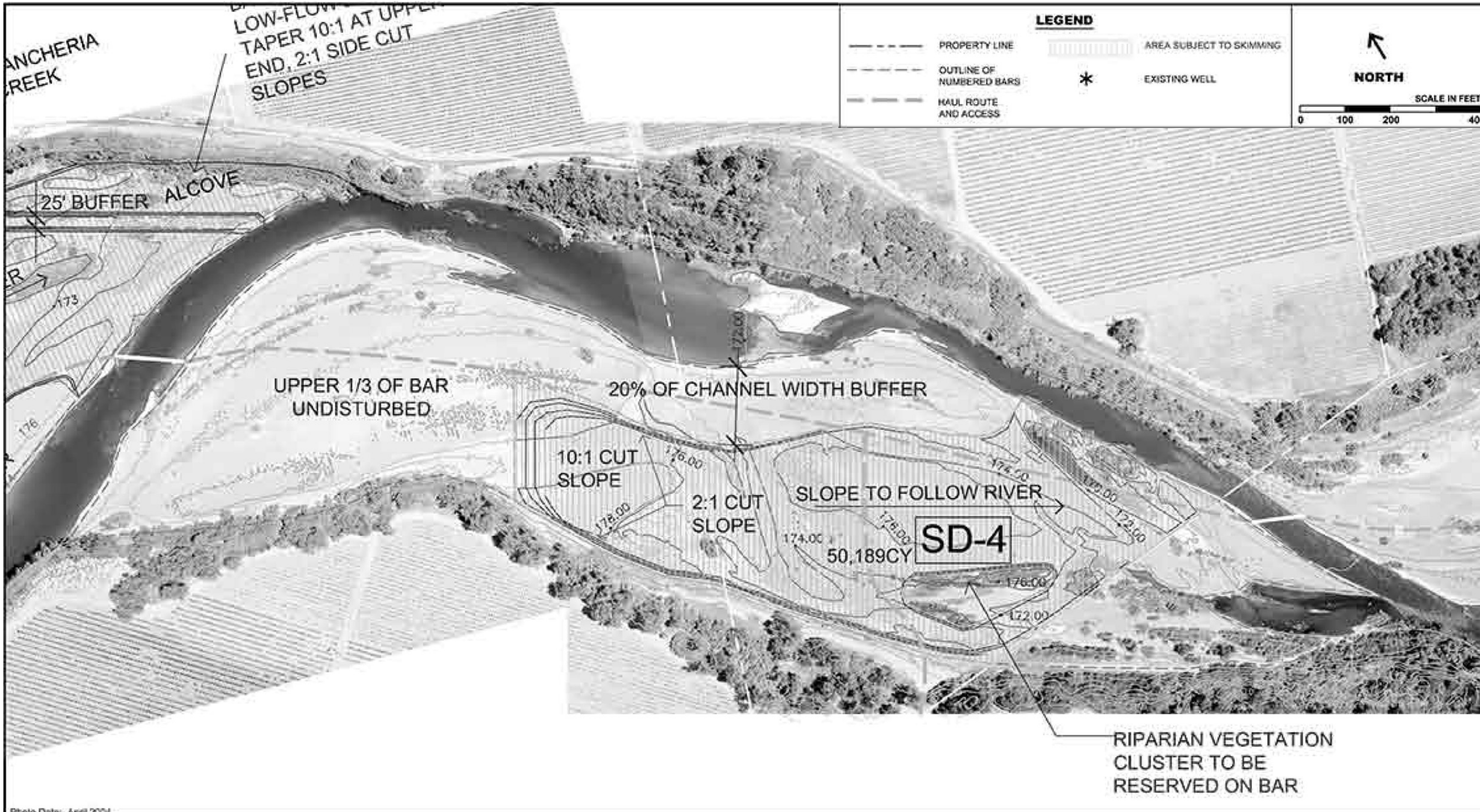
Figure 1-8f

Conceptual Mining and Enhancement Plan



Source: Syar, Inc. (2008)

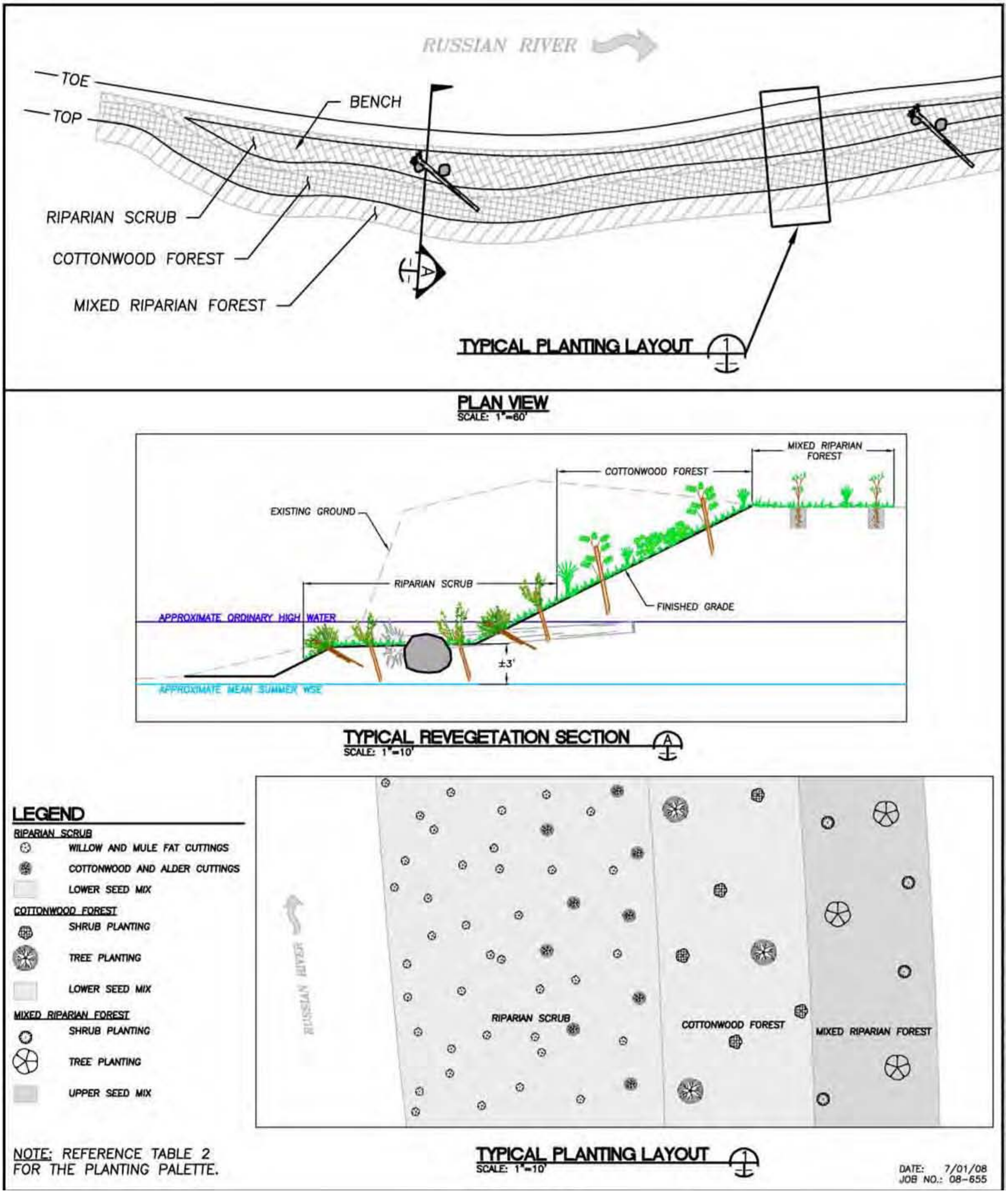
Figure 1-8g
Conceptual Mining and Enhancement Plan



Source: Syar, Inc. (2008)

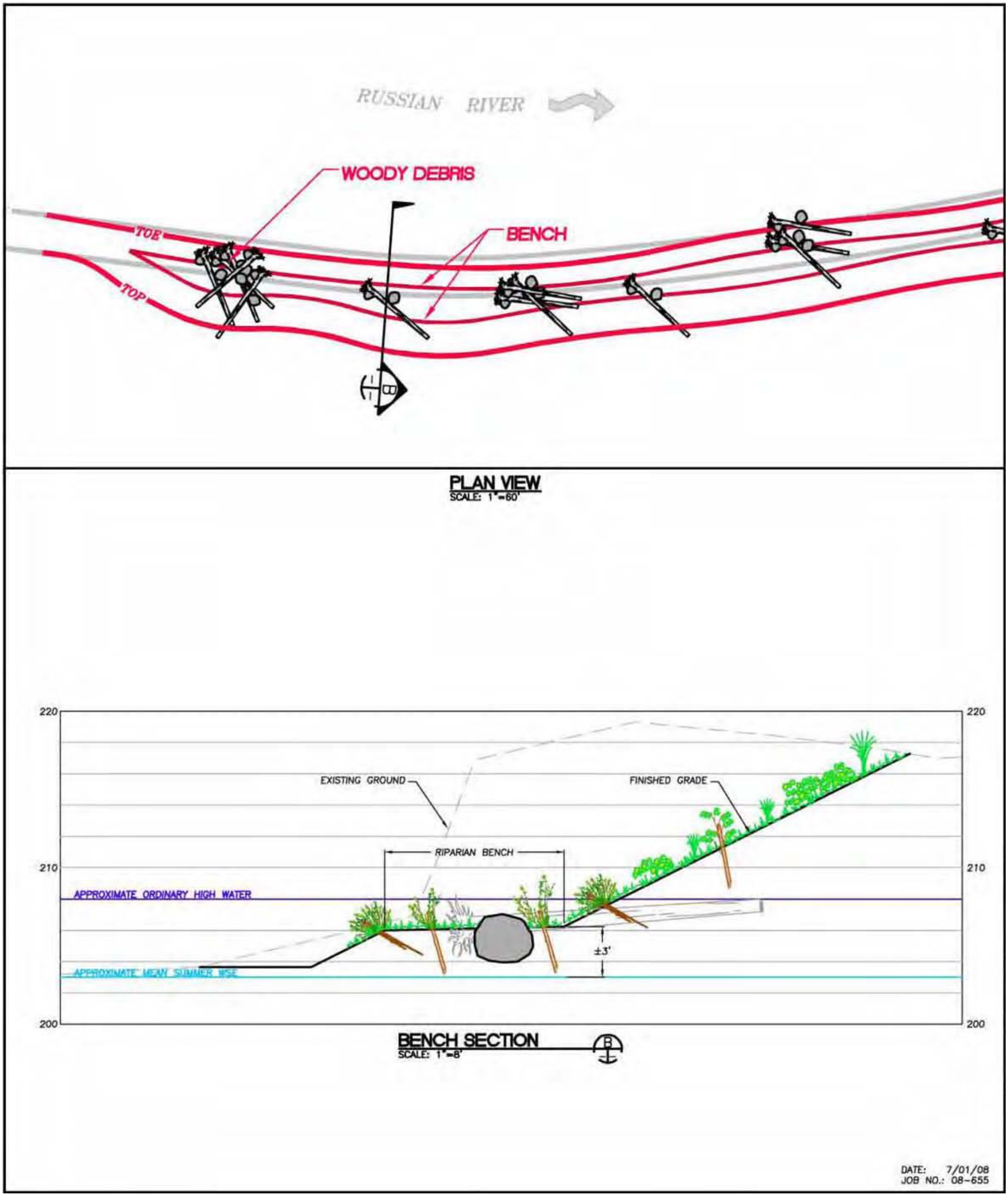
Figure 1-8h

Conceptual Mining and Enhancement Plan



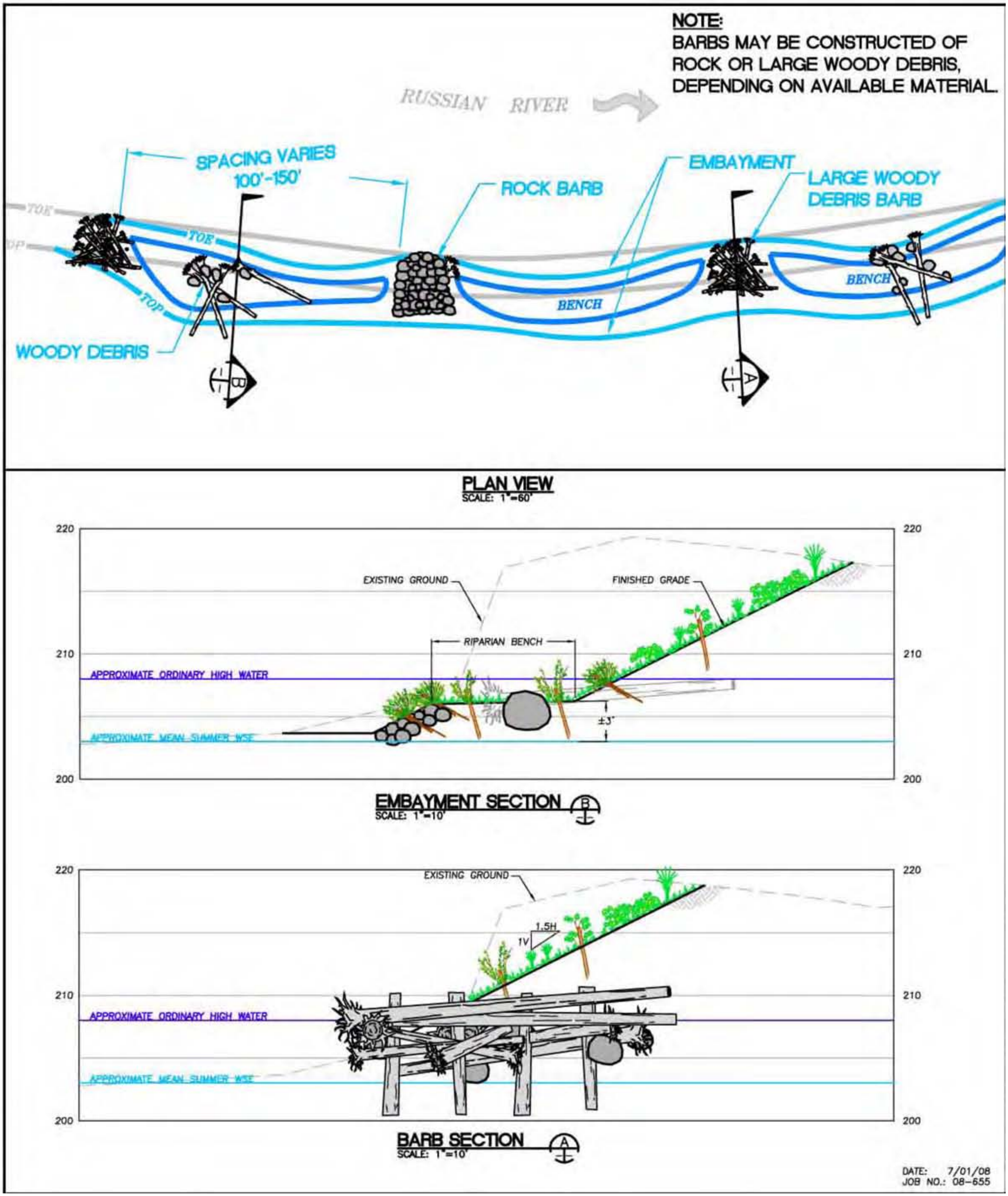
Source: Syar, Inc. (2008)

Figure 1-9a
Conceptual Revegetation Plan



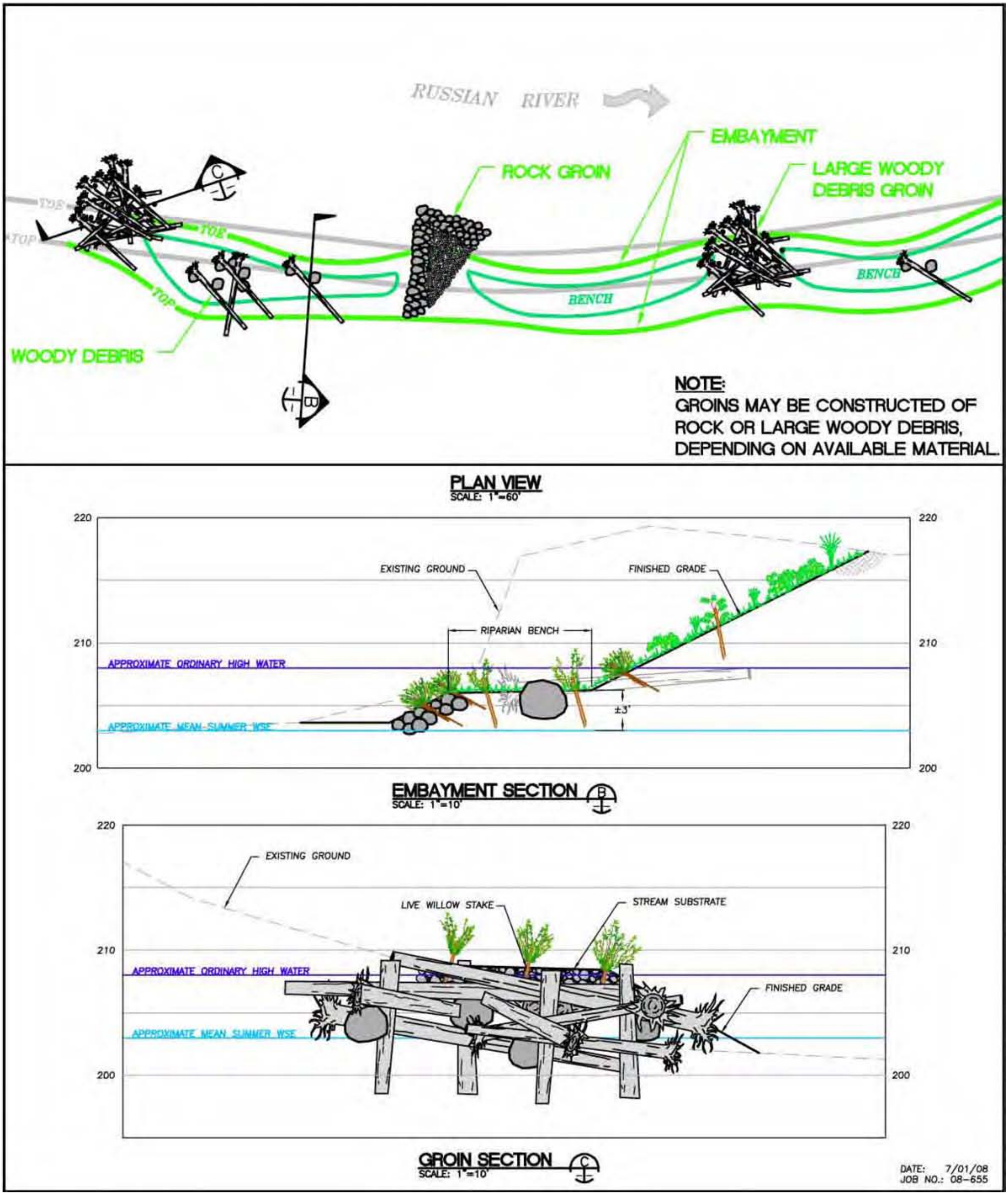
Source: Syar, Inc. (2008)

Figure 1-9b
Conceptual Plan for Bioengineered Bank Stabilization Option 1: Benching



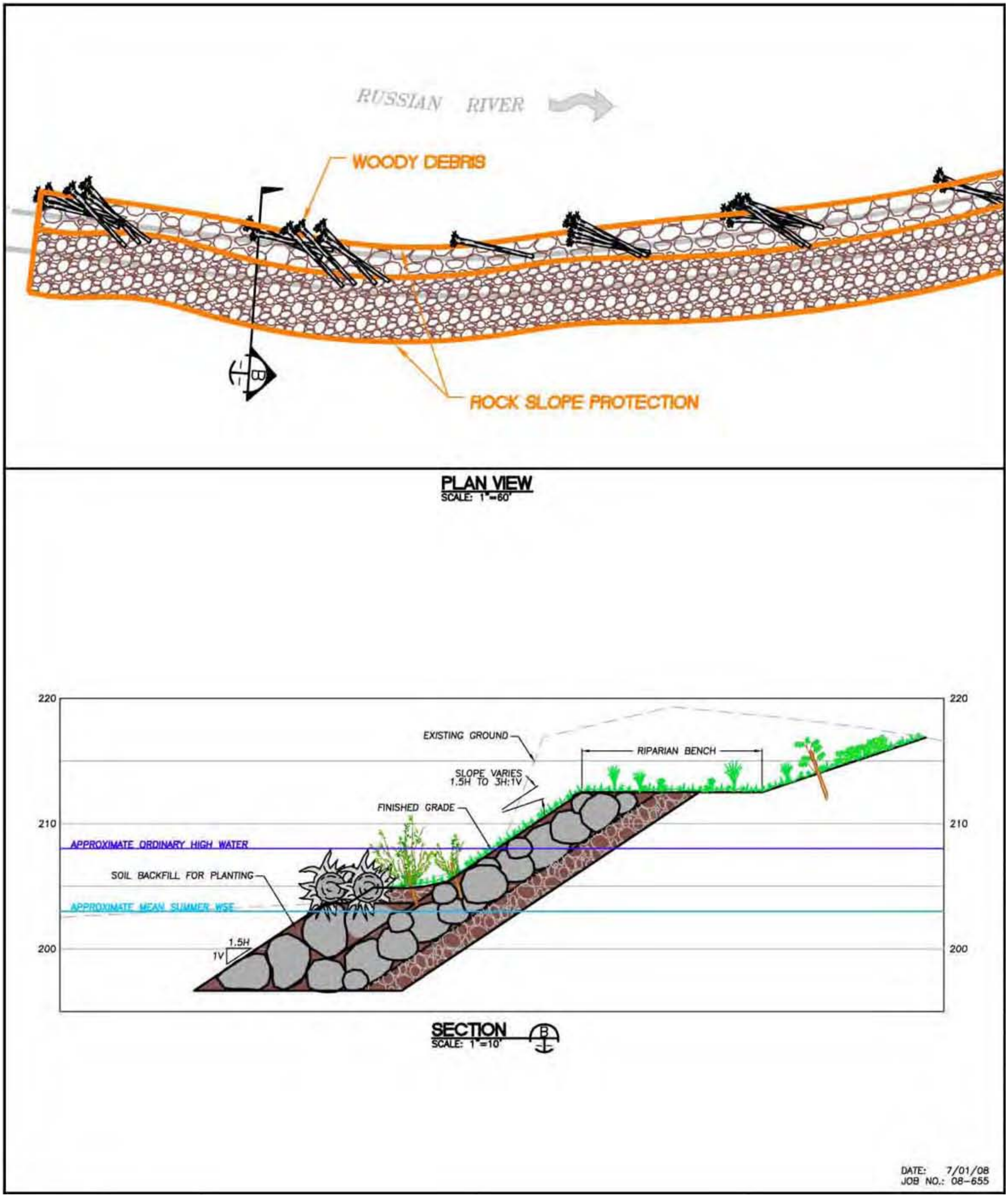
Source: Syar, Inc. (2008)

Figure 1-9c
Conceptual Plan for Bioengineered Bank Stabilization Option 2: Barb and Enbayment



Source: Syar, Inc. (2008)

Figure 1-9d
Conceptual Plan for Bioengineered Bank Stabilization
Option 3: Groin and Embayment



Source: Syar, Inc. (2008)

Figure 1-9e
Conceptual Plan for Bioengineered Bank Stabilization
Option 4: Rock Slope Protection

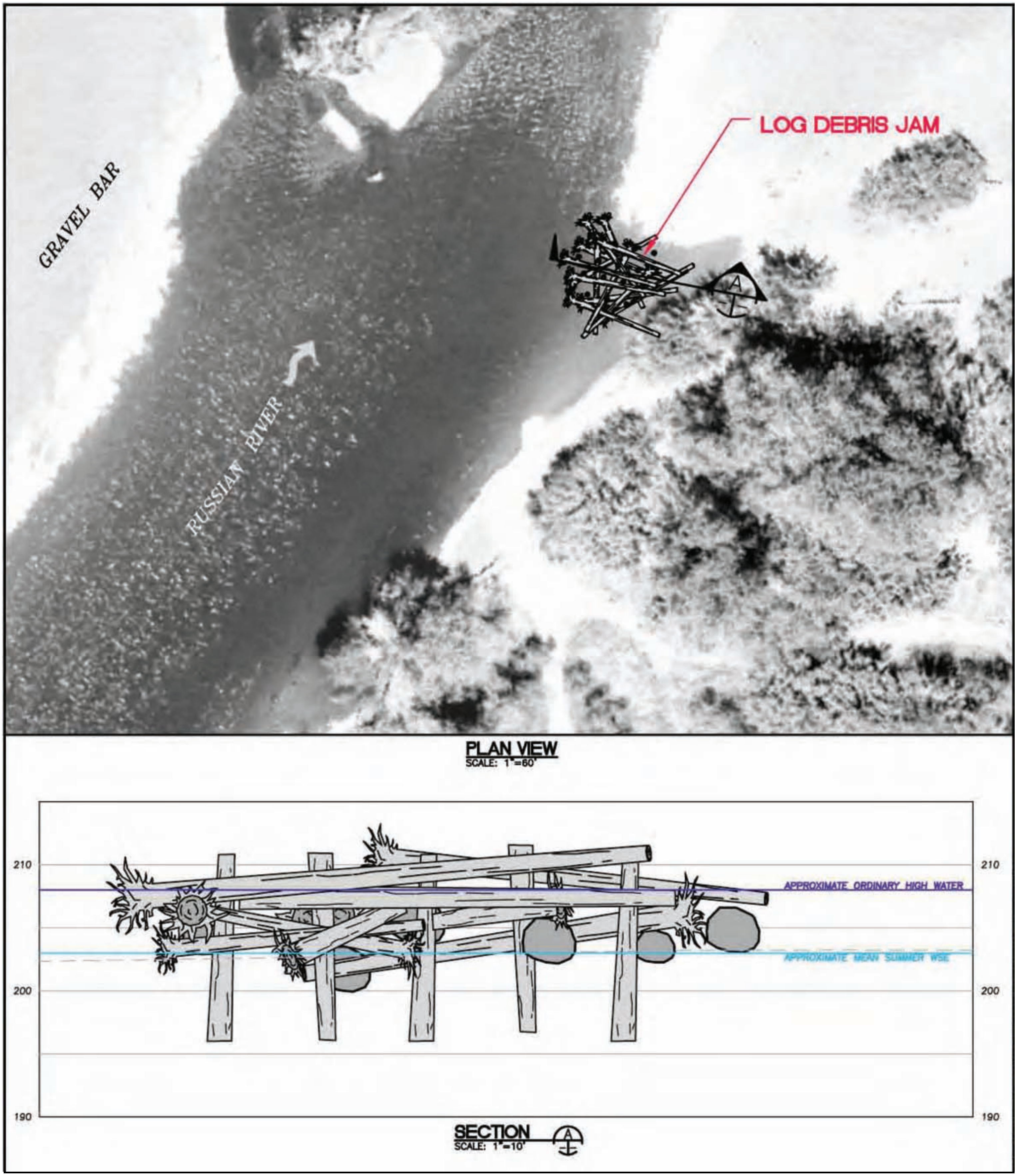
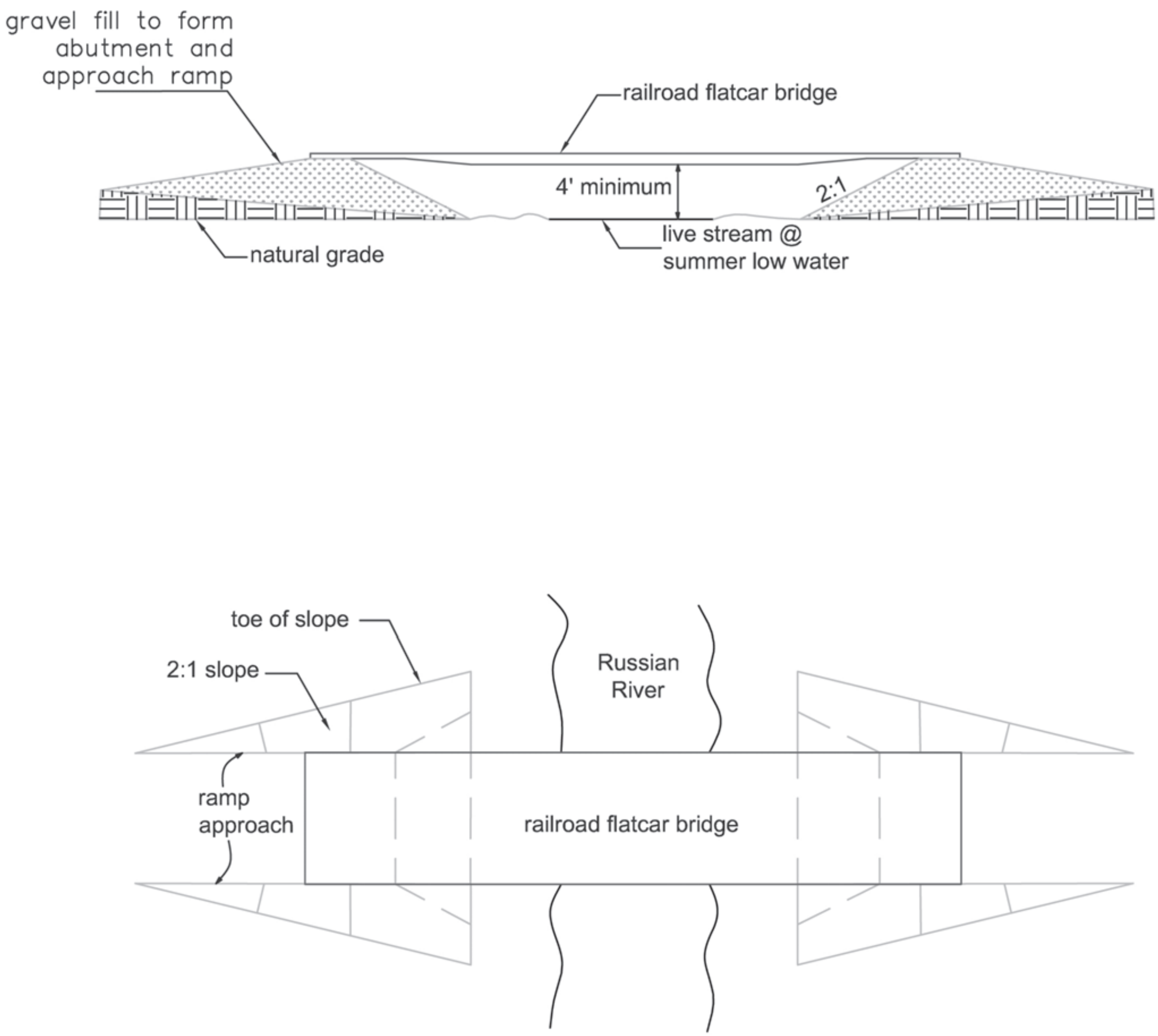


Figure 1-9f
Conceptual Plan for Installation of Large Woody Debris (LWD)



Source: LSA, 2007

Figure 1-10
Typical Temporary Bridge

Effective Discharge Stage Height (EDSH)

The EDSH method is also proposed to be used subject to PRMD approval of an annual mining permit, but is not the primary extraction method. The Effective Discharge Stage Height (EDSH) method defines the limits of skimming areas based on a flow concept known as effective discharge[4]. Syar would use a hydraulic model to determine the effective discharge flow rate for a particular bar based on the bar-specific conditions. The elevation of the water level at the effective discharge flow rate would be determined and that line would be superimposed upon the gravel bar, much like an elevation contour. Syar would maintain a lateral buffer with a minimum of 50 feet in width from the established effective discharge line. Syar would establish cut-slopes along the sides of the skimmed area at a 2:1 ratio. In addition, Syar would establish variable slope ratios, between 5:1 and 10:1, at the upper portion of the skimmed area to discourage the scouring action of overtopping flows and reduce the potential for the initiation of head-cut erosion. The floor of the skimmed area would be established 1 foot above the summer low-flow elevation of the river, with a downstream gradient equal to the river.

RIVER ENHANCEMENT ACTIVITIES

Syar proposes river enhancement activities to improve river habitat and ecological conditions. These activities are described in detail in Appendix D: *Russian River— Alexander Valley River Enhancement Plan for Syar Industries Reach* (Syar 2008) (River Enhancement Plan or REP). Generally, Syar proposes to construct three oxbows and three alcoves within the project reach. Syar proposes to replant 6 acres of riparian woodland as part of the oxbow and alcove constructions. An additional 5 acres of riparian plantings (described below) are proposed for a total of 11 acres of riparian restoration. These proposed enhancement activities would be carried out over a 6-year period within the 15-year use permit term.

Syar would carry out proposed enhancement activities based on a cost of $0.30 per ton of aggregate material mined from the project reach over the 15-year project term. Total enhancement activities for the 15-year period would be equivalent to $1,575,000. Additional enhancements may be implemented using these funds, or if additional funding from outside sources becomes available. The specific enhancement activities would be approved annually through the Adaptive Management Strategy (AMS) process described below. The timing of the enhancement activities, or the activities themselves, may change through the AMS process if other enhancements are given higher priority by the PRMD, in consultation with the Scientific Review Consultants and the resource agencies. In this case, Syar's efforts would be shifted toward those enhancement activities with higher priority.

While the ARM Plan does not require any riparian enhancement, the ARM Plan does require contributions to the Russian River Gravel Mitigation Fund to address cumulative impacts of erosion and fund bank stabilization projects. Syar is requesting a waiver of past due amounts owed for the DeWitt mining between 1995-1999 in the amount of $82,006 and any future gravel mitigation fees in light of the proposed enhancement plan.

Up to 25% of the aggregate volume generated from the enhancement activities is expected to be gravel and would be hauled to the processing plant in Healdsburg. This aggregate would be included in the project maximum yield of 350,000 tons per year. The remaining materials (topsoil and overburden) that are not hauled to the processing plant would be stockpiled for use in the various enhancement activities.

[4] Effective discharge is the magnitude of flow that carries the greatest volume of sediment over time.

Riparian Revegetation

Revegetation is a key component of all the enhancements proposed by Syar. It is also described as an enhancement by itself within the River Enhancement Plan. Syar proposes to plant 5 acres (in addition to the plantings that are proposed in coordination with the oxbow and alcove activities) in the 15-year project term, focusing on cottonwood forest restoration. The total area to be planted would encompass more than 11 acres. Revegetation would expand the riparian vegetation habitat and thus habitat for wildlife, provide bank stability, and eventually provide large woody debris to the aquatic habitat.

The REP discusses three riparian communities that may be replanted: riparian scrub, cottonwood forest, and mixed riparian forest. Revegetation for each of these communities are discussed in terms of occurrence of plant species, planting palettes to be utilized, planting techniques and methods, establishment probability, planting locations, and hydrology in the REP. Plant maintenance during establishment including watering, invasive species control, and repair of plant basins would also be carried out for a period of 1–5 years depending on the community and establishment success.

Oxbows

Syar proposes to create oxbows in three locations as a means to promote floodplain connectivity, recruitment of native riparian vegetation, and a high water refuge for fish. Oxbow construction involves excavating a swale within alluvial material at or near the margins of the active channel. The invert elevation or thalweg of the oxbows are designed to be within 3 feet of the summer low flow water surface elevation where it would sustain high moisture availability, and receive frequent wintertime inundation and fine sediment deposition. The oxbow finished grade elevations would transition from the low summer flow to the mean annual flood stage (i.e., between 3 to 5 feet above summer low flow). This design would create conditions favorable for recruitment and establishment of riparian scrub, cottonwood forest, and other wetland vegetation communities. Oxbows would be particularly useful as a habitat enhancement measure during drought periods when riparian vegetation recruitment is limited. One oxbow is proposed on Bar S-7 and two oxbows are proposed on Bar S-13 as shown in Figures 1-2, 1-3, and 1-4.

Alcoves

Syar proposes to initially construct alcoves at the mouth of three tributaries to the Russian River within the project reach in the first 6-year cycle: Rancheria, Miller, and Gill Creeks. Syar would use alcoves as a habitat enhancement feature and in conjunction with the primary horseshoe skimming method. Alcoves are intended to benefit fish habitat by facilitating access to tributary streams during upstream migration. Syar would create alcoves on the downstream end of selected bars to provide velocity and turbidity refuge for juvenile and adult fish during moderate to high river flows in winter, and to provide thermal refuge for juvenile fish during the summer season. Alcoves would be small and irregularly shaped to avoid disturbance of riparian vegetation. Cut slopes along the interior sides of the skimmed area would be graded to a 2:1 ratio, while the cut slopes at the upper end of the skimmed area would be 10:1 ratio as shown on Figure 1-6. Alcove depth would approximate the thalweg elevation of the Russian River at the alcove outlet. The depth of the alcove would gradually decrease to meet existing grades near the mouth of the tributary. The alcove would be open to the low-flow channel on the downstream end to avoid fish stranding.

Optional Programmatic River Enhancement Activities

Although not specifically proposing to implement any programmatic enhancement activities, Syar has described a number of optional programmatic river enhancement activities that may be implemented during the 15-year mining plan. These optional programmatic river enhancement activities could be implemented as a substitute for the Syar-proposed enhancement activities through the AMS. These optional programmatic river enhancement activities could be carried out in addition to the Syar-proposed enhancement activities if funds from additional sources become available. Below is a description of these potential enhancement activities.

Riparian Forest Planting

In addition to the proposed riparian forest planting activities above, further planting in other potential areas in the study reach could occur. The River Enhancement Plan describes approximately 26 acres as being suitable for riparian forest planting. Specific methods for planting are discussed in the REP contained in Appendix D and illustrated in Figure 1-9a.

Streambank Enhancements

Streambank enhancements are designed to support woody riparian vegetation and reduce erosion to enhance riparian and aquatic habitats. The River Enhancement Plan proposes four options with varying degree of shoreline hardening. These REP activities may encroach upon, place material in, and rework the active waters of the river. In each of these four options, placement of large woody debris and revegetation of the streambanks would be implemented. For a full description of these enhancements refer to the REP in Appendix D.

(1) Benching would excavate selected steep, eroding streambanks and a portion of the adjacent terrace to produce low, broad streambanks to support riparian vegetation as shown in Figure 1-9b. The bench surface would be constructed at the elevation of ordinary high water (i.e., 3–5 feet above mean summer low flow) with variation both in elevation and in the width of the bench to promote diversity and resilience of the future vegetation communities.

(2) Barbs[5] and embayments (a bay or bay-like shape) could be added to the benching option above in order to dissipate hydraulic force and redirect high velocity flows away from the bank to reduce erosion. Barbs (hardened points constructed of LWD, boulders, or a combination of the two) would be placed every 100–150 feet. Barbs would be built into the bank and would extend from the toe of the bank to approximately 5 feet above the Ordinary High Water (OHW) as illustrated in Figure 1-9c. Embayments are a cove with a bench that is protected by the upstream barb.

(3) Groins are similar to barbs, but protrude into the river from the bank from 10 to 25 feet. They serve the same purpose as barbs and are expected to encourage sediment deposition along the banks. Groins would be placed at irregular intervals approximately every 75–150 feet along the streambank with embayments and low benches between as shown in Figure 1-9d.

[5] Barbs and groins are types of individual structures that protrude into the river, generally transverse (e.g., at right angles) to the flow. Other examples are jetties, spurs, wing dams, j-hooks, hard points, and bendway weirs.

(4) Bioengineered rock slope protection would harden the streambank for the entire length of a protected section. A low bench above the protected section would be constructed as well as shown in Figure 1-9e.

Large Woody Debris Jams

Large woody debris jams or engineered logjams may be used for bank stabilization and aquatic habitat enhancement. Large wood would be placed in the channel and secured with a combination of native stream substrates, large rock, and steel cable as shown in Figure 1-9f.

Giant Reed Control

Syar would cooperate with the Sotoyome RCD by allowing access to Syar-owned property along the project reach and by coordinating control efforts with the existing Sotoyome RCD removal program. Syar will also remove giant reed (*Arundo donax*) in the proposed river enhancement activities areas, such as oxbow and alcove creations and revegetation areas. These efforts would occur in addition to the giant reed removal that would occur during the mining efforts. Methods for giant reed removal will be similar to those described above in the removal for mining.

Tributaries Enhancements

To enhance salmonid habitat in the lower reaches of the tributary streams, tributary enhancements may include placement of large woody debris and/or large rocks to promote scour and bench excavation and revegetation to create a vegetative canopy. These enhancements, if implemented, are expected to offset habitat deficiencies identified in the *Draft Habitat Restoration and Conservation Plan for Anadromous Salmonids Habitat in Selected Tributaries of the Russian River Basin* (NMFS 2007).

Avoidance and Minimization Measures

Syar proposes avoidance and minimization measures to avoid impacts as part of River Enhancement Plan activities. Before each REP activity, a preconstruction survey for special-status species and for nesting birds would be completed within 200 feet of the enhancement area. If any special-status species are detected, Syar would consult with PRMD and the resource agencies to determine avoidance and/or minimization measures, possibly including avoiding activities until August 1 or until after birds have fledged.

Some River Enhancement Plan activities may require the disturbance of active waters of the Russian River or associated backwaters. If REP activities include placing materials (e.g., large rock or large woody debris) into active waters, then best management practices (BMPs) such as silt curtains would be used and turbidity monitored. If bank enhancements involve work in the low-flow or active stream channel, a dewatering plan would be implemented and may include the construction of a bypass channel on the opposite bar, as well as emplacement of gravel berms to direct the flow of water and prevent water from entering the back side of the work area. For dewatering activities, a fisheries biologist would rescue stranded native fishes using electroshocking gear and nets, then relocate them. Enhancement activities would commence only when electroshocking and netting no longer yield native fish. After construction of the enhancement is complete, the low-flow channel would be regraded, the berms would be removed to allow rewatering, and the temporary bypass channel would be backfilled.

OPERATING STANDARDS

Operating standards proposed as part of the project are described below.

Equipment

Syar proposes the use of the following diesel-powered equipment during mining operations:

- Front-end loader
- Bulldozer
- Water truck
- Motor grader
- Aggregate hauler
- Fuel and lube truck (this equipment would arrive on-site once a day)
- Crane (this equipment would be present only for installation and removal of temporary river crossings)
- Haul trucks

No fueling of equipment and vehicles would occur on the proposed bars. Fueling of the equipment, except the haul trucks, would occur on terraces (outside top of bank) away from the river. Syar would fuel the haul trucks at its processing plant in Healdsburg or at off-site fueling stations. Regular maintenance, lubrication, and fueling would occur at the job site (outside top of bank); major equipment repairs would occur at the processing plant. Syar would implement its Spill Prevention Fueling and Lubrication Plan (Appendix E) if emergency spills were to occur. The plan identifies the emergency equipment that must be maintained on-site and procedures that must be taken in the event of an accidental discharge and/or release. In addition, Syar would provide portable sanitation toilets with wash sinks on the terrace near the access road above the top of bank.

Equipment Staging

Syar would stage unused extraction and loading equipment and worker vehicles on the terrace above the gravel bars on an opportunistic basis. An additional and more permanent staging area is located at the base and downstream of the Geyserville Bridge on the west side of the Russian River (Figure 1-1). Haul trucks would be parked at the Healdsburg processing plant and office at the end of each day and driven out to the site in the beginning of each day.

Access

Syar would access the gravel bars from U.S. 101 to primary roads running parallel and along the west side of the Russian River, and then along private farm roads to the gravel bars. Haul routes, and public and private access roads are shown in Table 1-2 and identified in Figures 1-2, 1-3, and 1-4. Syar would select from the haul routes listed on Table 1-2 based on the location of skimming activities for that year, the site conditions at the bar and along the haul route, other activities (such as river enhancements) occurring in the river or along the haul route, and the availability of the haul routes. Syar would post traffic signs on private roads as needed to define the haul routes and to establish appropriate speed limits (15 mph) for safety. Syar would maintain haul roads in a smooth, rut-free condition using motor graders.

Table 1-2
Public and Private Access to the Proposed Mining Sites

Bar No.	Route Description	Haul Route Number
SD-1	Healdsburg Road, Lytton Station Road, Hassett Lane, Olivier, private roads	2
SD-2	Healdsburg Road, Lytton Station Road, Hassett Lane, Olivier, private roads	2
SD-4	Healdsburg Road, Lytton Station Road, Hassett Lane, Olivier, private roads	2, 5
S-4	Healdsburg Road, Lytton Station Road, Hassett Lane, Olivier, private road; or Banti Lane, private road (via S-6 route)	2, 3, or 4 (5)
SD-5	Healdsburg Road, Lytton Station Road, Hassett Lane, Olivier, private road (temporary bridge); or Banti Lane, private road (via S-6 route)	2, 3, or 4 (5)
S-5	Independence underpass, Geyserville Avenue, Ferguson Road, private roads; or Banti Lane, private road (via S-6 route)	2, 3, or 4 (5)
S-6	Banti Lane, private road	3,4, or 5
S-7	Geyserville Avenue, Hamilton Lane, private roads (temporary bridge)	5
S-8	Geyserville Avenue, Hamilton Lane, private roads	5
S-9	Access from S-8 (temporary bridge)	5
S-10	Access from S-8 or S-13 (temporary bridges)	5 or (6 and 7)
S-11	Canyon Road, Geyserville Avenue, private road (temporary bridge)	6, 7 and 8 (5)
S-12	Canyon Road, Geyserville Avenue, private road (temporary bridge)	6, 7 and 8 (5)
S-13	Canyon Road, Geyserville Avenue, private road	6, 7 and 8 (5)
S-14	Canyon Road, Geyserville Avenue, private roads	6, 7 and 8 (5)

Notes:
Alternative access routes are provided (in parentheses) in the event that regular routes are not available.
Former haul route 1 has been omitted from the current project plan.
Source: Data compiled by EDAW, 2009

Syar would construct temporary access roads down the riverbank to the gravel bars. The access roads down the bank will be a maximum of 15' wide (per SMARO), with only one 15' wide road per bar to be mined. Syar would use the smallest practical grade differential from bank to bar surface in the construction of these roads.

Syar would construct temporary bridges across the low-flow channel to access sites that are not directly accessible via private roads (e.g., between gravel bars). Bridges would be in place from June 15 to October 15 to limit disturbance within the active stream, consistent with any NMFS and DFG regulations regarding the placement of crossings. During the remainder of the operating season, Syar would skim bars that are directly connected to access roads and do not require temporary bridges.

Syar would install temporary bridges, using railroad flatcar bridges or equivalent structures, to provide a minimum clearance of 4 feet above the summer low-flow channel elevation and a minimum of a 20-foot-long span across the waterway (Figure 1-10), consistent with the County's mining ordinance. Construction of the bridges would not involve any excavation activities, but would require Syar to place fill on either side of the channel above the natural grade to form the abutment for the bridge. Only clean, washed gravel would be used as fill in the water for the temporary bridge abutments to get the minimum clearance and provide additional support. Syar would install wood or steel supports within the abutment. Gravel placed in the river would be pushed out, rather than dropped in the river. Wet crossings of the equipment would be minimized. Before the placement of equipment or gravel, a qualified biologist would inspect the area to ensure that fish or wildlife would not be affected.

Dust Control

Water for dust control would be provided from irrigation wells and applied using a water truck. A water truck would spray water along the haul routes to control fugitive dust. Syar would use a motor grader periodically to rework the road surface and incorporate wetted soil into the roadbed. The water truck would have a capacity of approximately 4,000 gallons. Application of water for dust control would vary depending on the temperature, but would occur approximately two times per day on a normal summer day.

Drainage and Sediment Controls

Syar would manage drainage within the skimmed areas by grading the skimmed floors to a smooth slope. Syar would conduct bar skimming in the dry season from June 1 to November 1, outside the wetted stream and above the summer low-flow level of the Russian River, thus limiting erosion potential. Syar would also implement BMPs to minimize erosion. BMPs are described in different sections of this chapter and include straw wattles and willow stakes.

Buffer

Syar would maintain a setback of 30 feet or 2.5 times the slope height, whichever is greater, from the outer riverbank (top of bank) to the interior edge of skimming areas (see Figure 1-5). The alignment of the summer low-flow channel of the Russian River would be protected by retaining a buffer at the upper one-third of each bar, as well as a buffer along the outer edge of each bar along the low-flow channel measuring approximately 20% of channel bed width (low flow channel plus the width of the bar). Syar would strengthen the buffer area at the upper one-third of each bar by transplanting riparian vegetation removed from the skimmed areas. These buffers, with the exception of haul routes, would be considered "no-equipment" zones intended to protect the river against disturbance during skimming operations.

Hauling

Syar would hire independent truckers to haul gravel to the aggregate processing plant in Healdsburg. The plant is located on Healdsburg Avenue, and is accessed directly from U.S. 101. Multiple haul trucks would be in operation simultaneously on the project. Different trucks could be offloading at the aggregate processing plant, loading at the mining site, and transporting on the haul routes. Each haul truck could transport a load of approximately 25 tons. The geographic concentration of trips would depend on the location of the mining activities and the selected haul routes during that mining season.

Syar would haul Mondays through Fridays only (except holidays) and from June 1 through November 1 and extend over a maximum period from 6 a.m. to 9:30 p.m. Truck operations would vary during the course of the year and trucks could only travel from 30 minutes after sunrise to 30 minutes before sunset. With allowances for meals, refueling and a shift change each day, there would effectively be a maximum of 12 hours of traffic generation.

The estimated round-trip travel time between the sites and Syar plant in Healdsburg is about 1 hour. Although travel times may vary slightly depending on the bars mined and the routes taken to and from the processing plant from year to year, a 1-hour travel time is an accurate and conservative estimate for project considerations.

It is estimated that no more than 20 truck trips could access the site, load, and depart the site for the plant. As such, 20 vehicles could access the roadways and intersections leading to the site and 20 vehicles could access the roadways and intersections leading to the plant per hour. Given that the hauling operation could last for a maximum of 12 hours per day, 480 daily trips (i.e., 240 round trips) could occur (40 peak hour trips times 12 hours of operation per day). This estimate of 480 one-way trips is based on a peak scenario rather than an average and may overestimate subsequent impacts.

Processing

No processing of the skimmed material would occur within the river bar skimming area. Syar would process all excavated aggregate at its Healdsburg processing plant.

Number of Workers

Syar would require an average of five full-time workers on-site during mining activities (to prepare the sites and operate mechanical equipment). Haul truck drivers would be in and out of the site throughout the day to load and haul away aggregate material. Other workers would be present at the site periodically during pre- and post-extraction surveys and reclamation activities. Up to 20 one-way staff vehicle trips would occur per work day.

Schedule

Syar proposes to conduct mining operations during the dry season from June 1 to November 1 for 100–110 days. Syar proposes to conduct mining operations Monday through Friday, during daylight hours only (starting from 6 a.m. and ending as late as 9:30 p.m. as daylight allows[6]). Syar would not conduct mining or processing on Saturdays, Sundays, or federal holidays. Skimming operations would begin upon approval of necessary plans and permits.

[6] Because operations would be conducted during the daylight hours only, no night lighting would be used.

Reclamation

The reclamation activities discussed below are actions proposed in the 2006 Mining and Reclamation Plan (Syar 2006). These activities may be included as part of an annual reclamation plan to be submitted to PRMD for approval prior to each mining season.

Reclamation activities would occur at the end of each operating season (annual reclamation) and at the end of the final year of operations for each bar (final reclamation). Reclamation covers a range of activities, including the removal of equipment and the treatment of the mined gravel bars following skimming and revegetation. Final reclamation could occur simultaneously with annual reclamation procedures.

Reclamation activities would consist of the following activities:

- *Removal of equipment:* Syar would remove all equipment and vehicles upon completion of skimming activities.
- *Removal of temporary bridges:* Syar would remove temporary bridges using a crane and other construction equipment at the completion of the operating season. Following removal of the bridges, Syar would remove the above-water support gravel and smooth the area to match the surrounding grade.
- *Ripping of temporary haul roads across the bars:* Syar would rip[7] the soil compacted by truck and equipment traffic to a depth of 12 inches to loosen the ground before revegetation at the end of the operating season; revegetation would occur on road segments that traverse the banks. Syar would grade the corridor to match adjacent terrain. Syar would reinstall all existing bank reinforcements (e.g., riprap) at the completion of reclamation activities.
- *Smoothing of skimmed bars:* At the end of each operating season, Syar would smooth the skimmed bars, using a motor grader followed by a bulldozer dragging a heavy, long rigid drag. The rigid drag would be 20 feet or longer so that it would span the potential width of depressions and irregularities in the bar. The procedure would be necessary to reduce ponding and potential fish entrapment after high winter river flows across the bar have subsided.
- *Reclamation of access roads:* Individual access roads from the terraces to the gravel bars (across the channel banks) may provide access over several operating seasons because temporary bridges allow movement from bar to bar upstream and downstream of such access points. Access roads from the terraces to the gravel bars would be reclaimed when all skimming involving any one access road has been concluded. Reclamation work would involve ripping the ground surface, reseeding with an erosion control seed mix compatible with surrounding riparian vegetation, covering the ground surface with straw to minimize erosion, and staking straw wattle rolls at 50-foot intervals across the slope of the roadway to intercept silt.
- *Revegetation and monitoring:* Syar would transplant clusters of native riparian vegetation removed from skimmed areas to the head of the bar, the high-bank setback, and areas of giant reed removal as part of the skimming operations. Transplanting of riparian vegetation would occur during the mining season before the actual skimming operation. Syar would supplement the transplanting approach with pole plantings. Syar would cut and place willow stakes during the winter season to improve revegetation success (i.e.,

[7] Ripping is defined as cutting or tearing apart.

willow stakes would be cut in the appropriate season and kept in cold storage for planting on-site at the appropriate time during late winter while the water table is still high). During the first year after transplanting, Syar would monitor once every 2 months in areas where access roads have been seeded and areas that have been pole planted. After the first year, monitoring would occur on a quarterly basis for a period of 5 years. Water for reclamation planting would be provided by irrigation wells located on Syar farming property, which are located adjacent to many of the proposed bars. Water trucks would be used to provide water for reclamation planting and transplanting activities. However, at the conclusion of mining, watering would cease.

ADAPTIVE MANAGEMENT STRATEGY

Overview

Adaptive Management Strategy Background

In 2003, NMFS issued *Sediment Removal from Freshwater Salmonid Habitat: Guidelines to NOAA Fisheries Staff for Evaluation of Sediment Removal Actions for California Streams* (NMFS Guidelines). The purpose of the NMFS Guidelines was to avoid the take of listed salmonids resulting from the extraction of sediments from rivers and streams, either for commercial sale as aggregate or for flood control purposes.

In 2008, interagency meetings were conducted between the staff of the PRMD and the resource agencies, including NMFS, USACE, North Coast Regional Water Quality Control Board (RWQCB), and DFG. Various environmental compliance documents and permits are required for the project including the following:

- RWQCB water quality certification (also known as a Section 401 certification)
- RWQCB waste discharge requirement (WDR) under the California Porter-Cologne Water Quality Control Act
- DFG streambed alteration agreement
- DFG 2080.1 agreement or consistency determination
- USACE Section 404 permit (individual), and
- USFWS and NMFS Endangered Species Act (ESA) Section 7 consultations.

The purpose of the interagency meetings was to discuss proposed mining in the Russian River system and how this relates to the overall river management goals. The meetings focused on the Adaptive Management Strategy (AMS) proposed by Syar and how this could be used to ensure that mining activities are compatible with overall river management goals. An objective of the meetings was to work together to coordinate the various environmental compliance conditions of the permitting agencies by incorporating consistent standards, mitigation measures, reporting and monitoring requirements, and an adaptive management approach. In addition, the interagency group developed performance criteria to be incorporated into the AMS as mitigation measures. The AMS will aid in environmental compliance and permitting efforts by promoting consistent standards, mitigation measures, reporting and monitoring requirements across all efforts.

Description of the Adaptive Management Strategy

The Adaptive Management Strategy (AMS) is intended to produce a sustainable yield of aggregate while simultaneously implementing other objectives of the ARM Plan—the reduction of bank erosion, maintenance of flood flow capacities, protection of adjacent uses, removal of invasive vegetation, and enhancement of aquatic habitat and riparian natural communities along the Russian River. The AMS recognizes that the Russian River is a dynamic system because the river's configuration constantly changes. The AMS provides a framework for adjusting management decisions depending on the prevailing physical and biological conditions before the start of the mining season, and for allowing the lessons learned from earlier phases of mining to be incorporated into subsequent phases. Adjustments would be authorized by PRMD in consultation with the Scientific Review Consultants and the resource agencies with jurisdiction over the project. In general, the AMS would establish the baseline conditions for subsequent monitoring and consist of evaluations conducted before and after extraction to provide the basis for review and authorization of the annual mining plans.

Each fall, an evaluation of the river channel and adjacent riparian habitat would be conducted to evaluate the morphological alterations of the river, including aggradation above the baseline elevation, and vegetative growth. Baseline elevations proposed 1 foot above the mean low flow water level for horseshoe and EDSH skimming methods, at the river thalweg depth (below low flow water level) for alcove constructions, and at mean river flow level (i.e., 3-5 feet above mean low flow water level) for oxbow construction and benching activities. Based on the analysis, annual extraction volumes and methods would be proposed by Syar for the following operating season to implement the objectives of the ARM Plan. The annual preliminary mining plans would be submitted for review to PRMD and the resource agencies in the winter for advance review. This advance review would include the condition that the mining plan be verified for accuracy (i.e., that bar conditions did not change because of high winter flows) during the following spring, when another set of surveys and analyses would be conducted for the study area. Syar would conduct a field review with representatives of the various agencies at the outset of each operating season and make necessary modifications before start of operations.

Post-extraction surveys would be conducted at the end of each operating season in the fall to verify conformity with the mining plan developed in accordance with the AMS. The post-extraction surveys would also be used for subsequent analysis of river response to the mining including the natural recharge of aggregates. Other monitoring techniques such as habitat mapping, water temperature data collection, underwater observation, and spawning surveys may be employed in consultation with NMFS and DFG to ensure that the objectives of the ARM Plan are being met.

A panel of Scientific Review Consultants (SRC) under contract with PRMD has been established to monitor the Russian River and review annual mining plans and monitoring data. The SRC would review the monitoring reports against defined performance criteria, make site visits, and make recommendations on any adjustments for the next year before subsequent extraction begins. The SRC has and would include qualified experts in geomorphology, biology, ecology, and engineering. The SRC would consult with resource agencies in making a recommendation to PRMD who would authorize the annual mining plans and any adjustments to the methods, monitoring requirements or other enhancement measures.

The Adaptive Management Strategy, as proposed by Syar, includes four primary elements, each described in detail below:

- monitoring program (annual and long-term),
- performance criteria (annual and long-term),
- reporting requirements and review scheduling, and
- interpretation of monitoring results and adaptive management actions.

Monitoring Program

A monitoring program would be implemented to provide the basis for mining plans and determine whether performance criteria have been met on an annual basis. The proposed monitoring program is designed to ensure that appropriate site-specific (i.e., bar-scale) and system wide (i.e., reach-scale) monitoring is conducted by qualified professionals. This monitoring is intended, to provide sufficient information to PRMD, the Scientific Review Consultants and resource agencies with jurisdiction over the project to make informed decisions about compliance with stated performance criteria, potential changes under the Adaptive Management Strategy, and compliance with other permit, ARM Plan, and SMARO requirements.

Under the AMS, mining and reclamation operations would be adjusted as necessary to meet the site-specific objectives and performance criteria described below. PRMD and the resource agencies would require changes in the mining plan where monitoring data and/or analysis indicate that a change is necessary or desirable. Such adjustments would use information and analysis specific to the Russian River system, as well as the growing body of scientific knowledge with regard to interrelated river system dynamics, aquatic ecology, and land use practices.

Physical Monitoring

All survey measurements would be made in compliance with accepted published protocols and with reference to a permanent geodetic datum. The density of survey data must be sufficient to capture geomorphic features with 1-foot elevation change, or sufficient to construct a 1-foot contour map. All data would be prepared and processed to visually discern changes from year to year.

<u>Pre-extraction Topography.</u> Syar would survey river channel cross sections spaced at the historic County cross section points to characterize the channel topography. Topography would be measured over the entire project reach and extend both upstream and downstream at least three riffles, or a length equivalent to one complete meander whichever is greater. This would be done annually, before the beginning of the subsequent mining season. Syar would conduct the surveys before the mining season, after subsidence of high winter flows.

<u>Post-extraction Topography.</u> Syar would conduct a post-extraction topography survey at the end of the mining season only on those bars where extraction had occurred during that year to document “as-built” conditions. This task is necessary to confirm that grading of the bars were consistent with the grading plan. Topography would be determined by ground surveys.

<u>Longitudinal Profile.</u> Syar would annually survey the river thalweg[8] connecting the pools and riffle crests. The longitudinal profile would be measured over the entire project reach and extend both upstream and downstream at least three riffles or one complete river meander, whichever is greater.

[8] The thalweg is defined as the deepest continuous line within a waterway.

Riparian Vegetation Monitoring

Syar would delineate large stands of native riparian vegetation within the proposed extraction footprints. The presence of such stands may require adjustment of the extraction boundaries to avoid disturbance or transplantation to previously identified locations. If a large stand would be removed, then a transplantation and revegetation plan would be developed to mitigate the loss of the stand. Syar proposes that specific transplant and revegetation criteria in the plan would be drawn from a previously approved list that would be developed in consultation with resource agencies.

Collaborative Site Visits

Syar proposes to conduct field reviews with PRMD, resource agencies and the Scientific Review Consultants before and after extraction. The purpose of the pre-extraction (spring) review would be to (1) discuss the condition of the previous season's extraction areas following winter high flows, (2) discuss physical and biological monitoring information on-site, (3) identify which parts of the extraction plan that worked, (4) identify adjustments to improve extraction plans, (5) identify potential restoration opportunities, and (6) discuss the proposed extraction plan for the forthcoming mining season. These visits would allow the engineers and resource professionals of Syar and the permitting agencies to tailor extraction plans to specific bar conditions. The second field visit (fall), along with review of post-extraction topography information, would allow the resource agencies to determine compliance with the individual extraction plans.

Pools

Syar would determine residual pool volume as described by Lisle and Hilton (1999), either with surveying methods or with a combination of surveying and hydraulic modeling, to monitor changes in pool habitat quantity, relative to a permanent vertical datum and to the water surface corresponding to summer low flow. This would occur at two representative pools within, and one upstream of, the project reach.

Residual pool depths would be determined during the course of the instream habitat inventory monitoring program (see "Habitat Typing and Habitat Mapping" below).

Sediment Intrusion

Syar would measure the effects of fine sediment intrusion of potential spawning gravels at riffles. Intrusion effects would be measured by losses of permeability, or an equivalent alternative method approved by DFG and NMFS. This monitoring would be done at no fewer than three locations: at the downstream end of the mining area, at a riffle midway through the mining area, and at one location upstream of the permit area. PRMD and the resource agencies would approve monitoring locations. Each of the monitoring locations would be selected based on known usage by spawning salmonids or conformity with preferred habitat criteria.

Habitat Typing

Syar would conduct annual instream habitat inventories, utilizing the DFG protocol (Flosi et al. 1998), for the life of the permit. The survey reach would include the entire project reach and at least one full meander upstream. The information derived from the data would include pool, riffle, and flatwater lengths; residual pool depths; instream cover ratings; canopy closure; and dominant and subdominant substrate characteristics.

Habitat Mapping

Chinook salmon is the salmonid species that most heavily uses the mainstem Russian River within the Alexander Valley reach. Therefore, it is desirable to track trends in the quantity of adult holding, spawning, and early juvenile rearing habitats for this species. To accomplish this, Syar proposes to conduct a field-based delineation of individual adult holding, spawning, and rearing habitats in aerial photographs. Habitat polygon identification would be based on preferred habitat criteria and professional judgment by an experienced fisheries biologist. The habitat polygons would be digitized onto ortho-rectified aerial photographs and entered into geographic information systems (GIS). This survey would be conducted each year for the life of the permit. The survey reach would include the entire project reach and at least one full meander upstream.

Performance Criteria

Annual

Syar proposes the following performance criteria for all bars that would guide determination of the mining methods and extraction amount. The annual performance criteria consist of geomorphic and riparian conditions that must be met on an annual basis before mining operations could be initiated.

<u>Channel Degradation.</u> Channel degradation trends, as shown by annual changes in cross sections, digital elevation models, thalweg surveys, and/or riffle crest thalweg elevation surveys, must not show evidence of reach-average channel bottom invert lowering of greater than 2 feet.

<u>Riparian Vegetation.</u> Large (greater than 100 square feet with at least 25% of the stems greater than 1 inch in diameter at breast height) stands of native riparian vegetation within the proposed extraction footprints shall either be avoided or transplanted according to a DFG-approved planting plan.

Long-Term Trends

A second set of performance criteria that includes instream habitat conditions would be analyzed over a larger time period (once a large enough data set is compiled over several years) to be able to draw relatively confident conclusions regarding trends. These long-term trends relate to pools, sediment intrusion, habitat typing, and habitat mapping (described above) and would inform the SRC’s annual analysis of mining activities. The long-term instream habitat data would be used to determine whether adjustments to mining methods and protection measures are warranted.

Reporting Requirements and Review Scheduling

Syar would submit a compliance monitoring report detailing the nature of the observations, the effort of the surveyor(s), and any substantial deviations from planned operations. Any potential suggestions on ways to improve implementation of gravel extraction methods and/or terms and conditions would also be included. The report would be submitted within 60 days after that year’s operations were complete.

Syar would prepare preliminary mining plans during the winter before the spring mining season, detailing the specific gravel bars to be mined the following season. The mining plans would be based on cross-sectional survey data and digital elevation model results from the spring of the previous year. Plans would also include maps detailing the areas to be mined, surfaces or cross sections indicating pre- and post-mining contours, and estimated volumes to be extracted. The plans would be submitted to PRMD, the Scientific Review Consultants, and the resource agencies for early review. All mining plans would be checked for conformance with required mining standards and finalized by PRMD and the resource agencies after completion of the spring pre-extraction surveys (following winter rains). Mining plans would be subject to PRMD and resource agency authorization before the beginning of operations for that season. Syar would notify PRMD and the resource agencies in writing of their intent to begin operations no later than 1 week before initiation of extraction activity each year.

After the first year, Syar would submit proposed monitoring plans to PRMD and the resource agencies before initiation of monitoring. Monitoring plans would be submitted no later than January 1 of that year (e.g., the first monitoring plan would be due January 1, 2011, for mining in 2011).

Annual monitoring reports would be submitted to PRMD and the resource agencies concurrently with subsequent preliminary mining plans. These reports would include clear descriptions of how the monitoring results were taken into consideration in the development of the mining plan.

Preparation of Mining Plans

The mining plan proposes an Adaptive Management Strategy where the geomorphology and habitat of the river is monitored and evaluated annually, allowing for adjustments to the skimming configuration and/or methods on individual bars to enhance aquatic habitat, reduce bank erosion, maintain flood flow capacities, and protect adjacent uses in accordance with the objectives of the ARM Plan. The timing of the review and update process is outlined below.

For all bars, the digital elevation model from the spring aerial photography for that mining season would be used to adjust and finalize the preliminary mining plans prepared in the previous winter for that year. Photography would occur when the flow in the Russian River is less than 1,000 cubic feet per second (cfs). Mining would not occur before June 1, which is the start of the instream mining season.

The following days for review and approval of the mining plan are calculated from the date that the flow in the Russian River is less than 1,000 cfs:

- Preliminary mining plan is submitted concurrent with monitoring report (fall/winter).
- Flows drop below 1,000 cfs in the river. Spring aerial photos are taken.
- 15 days—the digital elevation model is prepared for those bars where mining is planned for that year.
- 30 days—final mining plan with the current digital elevation model is provided to PRMD and the resource agencies.
- 60 days—The mining plan for that year is finalized and mining may proceed in compliance with all standards.

Interpretation of Monitoring Results and Adaptive Management Actions

The Scientific Review Consultants would review the monitoring reports against the performance criteria, review proposed mining plans, make site visits, determine the appropriate actions for the next year and make recommendations to PRMD before authorization of subsequent extraction.

Should the performance criteria be exceeded, the following would occur:

- If channel degradation performance criteria were exceeded, all mining activities would be suspended until Syar has conferred with PRMD, and PRMD, in consultation with the resource agencies, have agreed how the performance criteria can best be met.
- If considerable stands of native riparian vegetation that were retained within the extraction footprint the previous year were to be lost in the following winter's runoff events, a revegetation plan would be developed and implemented after consultation with the resource agencies and PRMD.
- If, during the collaborative site visits with resource agencies and the Scientific Review Consultants, it were determined that mining activities had resulted in adverse affects on hydrologic geomorphic processes and/or aquatic habitats, all mining activities would be suspended until Syar has conferred with PRMD and the resource agencies, have agreed upon a method to meet the performance criteria.
- If PRMD, the Scientific Review Consultants, and/or the resource agencies were to conclude that any changes in excess of the performance criteria (described above) are the result of factors other than gravel mining activities, modification of extraction may not be required.

Proposed ARM Plan and SMARO Amendments

The ARM Plan and the associated mining ordinance established a regulatory program applicable to all future aggregate operations in areas designated by the plan (Sonoma County 1994). The proposed project is within one of the designated ARM Plan mining areas (the Lower Alexander Valley reach of the Russian River) and within a mineral resource combining zone. Syar proposes a longer permit term (15 years) and a different method of mining than allowed in the ARM Plan and mining ordinance requiring an amendment to both the ARM Plan and mining ordinance to allow exceptions to the standards. It should be noted, however, that the proposed exceptions to the mining standards were developed in response to the National Oceanic and Atmospheric Administration Fisheries Sediment Removal Guidelines (NOAA, 2004) and in consultation with the resource agencies. In addition, Syar has proposed a River Enhancement Plan (REP) in lieu of contributions to the Russian River Gravel Mitigation Fund that is required by the ARM Plan and mining ordinance. Although the ARM Plan and mining ordinance allow for protests of the fee amount, the proposed fee waiver will require an exception to the ARM Plan to allow approval of a river enhancement plan in lieu of the fee. Although no specific ARM Plan amendment language is proposed by Syar, the following summarizes the amendments and exceptions to the ARM Plan and mining ordinance standards that would be required for the project as proposed. The proposed changes to ARM Plan standards are illustrated in Figure 1-5.

<u>Changes to Permit Procedures</u>

- Revise objectives for instream mining to include protection and enhancement of aquatic habitat;
- Revise process for approval of mining permits to allow exceptions to mining standards;
- Allow exception for a 15-year instream mining permit (rather than a 10-year term) and incorporate an Adaptive Management Strategy that enables PRMD to adjust permit

conditions based on annual monitoring, performance criteria and consultation with the County's Scientific Review Consultants and resource agencies; and

- Allow approval of River Enhancement Plan as an exception to the Russian River Gravel Mitigation Fee.

Changes to Mining Standards for Lower Alexander Valley Mining Reach

- Adopt expanded monitoring requirements proposed for aquatic habitat to evaluate long-term trends related to pools, sediment intrusion, habitat typing, and habitat mapping as noted above;
- Establish performance criteria for the lower Alexander Valley reach to avoid channel degradation as noted above;
- Change the baseline below which mining cannot occur from a 2 percent cross-slope from the low flow water surface elevation to a level slope (0% slope) established one-foot above the mean low-flow water surface elevation as shown in Figure 1-5;
- Reduce the required head of bar buffer from the upper half of the bar (defined as above the apex or widest point of the bar) to the upper one-third of the total length of the bar as shown in Figure 1-5;
- Expand the required side bar buffer from a minimum of 15-feet (or as required by resource agencies) to 20% of the channel bed width (defined as the low-flow channel plus the gravel bar) as shown in Figure 1-5;
- Allow mining plans and buffers based on the Effective Stage Discharge Height (ESDH) if determined to be the most appropriate method during review of the annual mining plan;
- Allow below water excavations for the connection to the low-flow channel at the downstream end of the horseshoe skim and for enhancement features including excavation of alcoves, oxbows, floodplain benches or inset terraces and installation of large woody debris and bioengineered bank stabilization methods; and
- Approval of River Enhancement Plan and Program in lieu of the Russian River Gravel Mitigation Fee

Program-level impacts from the amendments to mining standards primarily affect hydrologic processes and related aquatic habitat and are analyzed in Section 3.2, "Hydrology", Section 3.4,,"Fisheries", and Section 3.5, "Vegetation and Wildlife.".Mitigation measures identified to be incorporated into the ARM Plan and mining ordinance include procedures for exceptions, revised standards, expanded monitoring requirements and performance measures. Chapter 5.0, ""Programmatic Level impacts of the Proposed ARM Plan Amendments" summarizes ARM Plan and SMARO amendments with incorporated mitigation measures, which are also illustrated in Figure 5-1.

1.6 DESCRIPTION OF ALTERNATIVES

Pursuant to Section 15126.6 of the State CEQA Guidelines, "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." A "no project" alternative is required under CEQA. Other reasonable alternatives include reducing the production of sand and gravel. These alternatives to the project are described below.

ALTERNATIVE 1—NO PROJECT

The “no project” alternative is defined as “what would reasonably be expected to occur in the foreseeable future if the project were not approved” (State CEQA Guidelines, Section 15126[e][2]). This EIR identifies a No Project Alternative, under which Syar would not implement the project as proposed. Syar would not conduct any mining activities within the proposed reach of the Russian River between Gill Creek and Jimtown Bridge. Without a source of high-quality aggregate generated within the county, alternative sources of gravel would be required. At present, no economically viable import source of Portland Cement Concrete–grade aggregate has been identified.

ALTERNATIVE 2—GRAVEL MINING IN COMPLIANCE WITH THE ARM PLAN

Under this alternative, Syar would mine aggregate resources along the proposed reach of the Russian River in accordance with the operational standards and timeline defined by the ARM Plan. These operating standards would not include an Adaptive Management Strategy that allows for flexibility in the type of mining methods implemented.

ALTERNATIVE 3—PROPOSED PROJECT WITH A 10-YEAR TIME PERIOD

This alternative would be similar to the proposed project, with the exception of the duration of mining. Syar would mine aggregate resources along the 6.5-mile Alexander Valley reach of the Russian River in accordance with the methods, standards, and Adaptive Management Strategy identified under the project. However, Syar’s permit would be limited to a term of 10 years as allowed in the ARM Plan, and no ARM Plan amendment related to the permit term would be required.

ALTERNATIVE 4—PROPOSED PROJECT WITH A LOWER EXTRACTION VOLUME

This alternative would be similar to the proposed project, with the exception of the annual amount of aggregate produced each year. Syar would mine aggregate resources along the 6.5-mile Alexander Valley reach of the Russian River in accordance with the methods, standards, and Adaptive Management Strategy identified under the project, including the daily and seasonal timing of mining activities. However, Syar would reduce its production from 350,000 tons to less than 132,000 tons per year to reduce the emissions of respirable particulate matter less than or equal to 10 microns in diameter (PM_{10}) to less than 15 tons per year.

ALTERNATIVE 5—PROPOSED PROJECT WITHOUT THE MINING OF BARS S-9 AND S-10 AND/OR USE OF HAUL ROUTE 5

This alternative would be similar to the proposed project, except that the operator would not mine Bars S-9 or S-10, and haul truck traffic would not use Haul Route 5. This alternative would eliminate the project’s significant unavoidable noise impacts on several receptors near Bars S-9 and S-10, and one receptor adjacent to Geyserville Avenue.

1.7 PROJECT REVIEW AND REQUIRED APPROVALS

LEAD AGENCY

The County is the lead agency under CEQA for the project. The Sonoma County Board of Supervisors will be responsible for:

- certifying the EIR,
- approving an amendment to the ARM Plan and related mining ordinance (SMARO) to: among other things, revise procedures for exceptions to the ARM Plan standards; incorporate revised objectives, standards and performance criteria for the Lower Alexander Valley Reach; allow a 15-year in-stream mining permit rather than a 10-year permit; allow below water excavations for the horseshoe skim method and enhancement activities including alcoves, oxbows, floodplain benches or terraces, installation of large woody debris and bioengineered bank stabilization methods, etc. The proposed ARM and SMARO Plan amendments are discussed in more detail in Section 1.5, “Project Description.”
- approving a use permit to allow an instream gravel mining operation, and
- approving of a reclamation plan, and
- approving subsequent roiling permits pursuant to ordinance 3836R. (A roiling permit is required for any project that may decrease the clarity of waters of any river or stream in Sonoma County).

The Sonoma County Planning Commission will review the EIR and make a recommendation to the Board of Supervisors on whether to certify the document. The Planning Commission will also make recommendations on the proposed amendments to the ARM Plan and SMARO and on the merits of the mining project.

PRMD will review the annual mining and enhancement plans. Specifically, PRMD will review the consistency of the project with the County General Plan, the County ARM Plan, and the SMARO*,* and make recommendations on the project to the Planning Commission. PRMD is also responsible for reviewing and authorizing annual mining plans subject to the approved mining permit and the financial assurance required for reclamation activities.

RESPONSIBLE AGENCIES

Section 15381 of the State CEQA Guidelines states that “Responsible Agencies include all public agencies (state and local) other than the lead agency, with discretionary approval power over the project.” Potential responsible agencies and required approvals for the project are listed below.

State Agencies

- *North Coast Regional Water Quality Control Board (RWQCB):*
    - o Water quality certification (also known as a Section 401 certification)—Section 401 of the Clean Water Act (CWA) requires that an applicant for any federal permit (e.g., a USACE permit) for any project that may result in a discharge into waters of the United States, to obtain a certification from the state that the discharge will comply with provisions of the CWA.

- o Waste discharge requirement (WDR) under the California Porter-Cologne Water Quality Control Act—The state regulates the discharge of waste (e.g., fill, any material resulting from human activity, or any other discharge) to waters of the state. A report of waste discharge must be filed with the RWQCB, which will then respond to the report of waste discharge by issuing WDRs in a public hearing, or by waiving WDRs (with or without conditions) for that proposed discharge.

- *Department of Fish and Game (DFG)*
  - o *Streambed Alteration Agreement:* DFG has authority to oversee work done in streams pursuant to Fish and Game Code Section 1602. An applicant that proposes to (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake must first enter into a streambed alteration agreement with DFG. A streambed alteration agreement is required for the project.
  - o *2080.1 Agreement:* Under Section 2080.1 of the Fish and Game Code, should Syar receive authorization to take federally listed species under the federal Endangered Species Act (ESA), take authorization may also be sought as a "consistency determination" from DFG. If DFG determines that the federal statement or permit is not consistent with the California Endangered Species Act (CESA), Syar would need to apply for a state incidental take permit under Section 2081(b) of the Fish and Game Code.
- *California Department of Conservation:*
  - o The department is responsible for implementation of the State Surface and Mining Reclamation Act (SMARA) and will review the project's reclamation plan and the annual financial assurance cost estimates.

OTHER AGENCIES

Federal Agencies

- *United States Army Corps of Engineers (USACE)*:
  - o USACE regulates activities that have the potential to affect waters of the United States under Section 404 of the CWA (Section 404 permit). The Section 404 permit would be an individual permit rather than a nationwide permit.
- *U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS):*
  - o These agencies administer the ESA. USFWS and NMFS are advisory agencies to USACE on Section 404 projects. Section 7 of the ESA requires USACE to consult with USFWS and NMFS to ensure that their actions are not likely to "jeopardize the continued existence" of any ESA-listed species or "result in the destruction or adverse modification" of designated critical habitat. Section 7 of the ESA allows USFWS and NMFS to issue a biological opinion authorizing the incidental take of listed species if such take is accompanied by reasonable and prudent measures to minimize and mitigate impacts associated with the take. A biological assessment is needed for consultation with USFWS and NMFS.

Local Agencies

- *Sonoma County PRMD:*
  - This agency issues encroachment permits for projects that involve work within public rights-of-way.

TRUSTEE AGENCIES

This EIR will also be sent to any identified trustee agencies. The State CEQA Guidelines (Section 15386) define “trustee agency” as “a State agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California.” Trustee agencies include DFG, which has jurisdiction over state fish and wildlife, designated rare or endangered native plants, and game refuges, ecological reserves, and other areas. (See discussion under “State Agencies” above.)

1.8 CUMULATIVE PROJECTS

The following other projects have been proposed or approved in the general area of the project:

- Shamrock Mining operations (conceptually identified in the ARM Plan)
- Gallo of Sonoma Winery Expansion (3387 Dry Creek Road, Healdsburg, CA)
- Clos du Bois Winery Expansion (19410 Geyserville Avenue, Geyserville, CA)
- Dry Creek Rancheria Economic Development Master Plan (River Rock Casino, Geyserville, CA)
- Syar Middle Reach Instream Mining Operations (Russian River middle reach, south of Healdsburg, CA)
- Saggio Hills Development (Healdsburg, CA)
- Rosso and Bianco (300 Via Archimedes Road, Geyserville, CA)
- Cloverdale Rancheria of Pomo Indians Fee-to-Trust and Resort Casino Project (Cloverdale, CA)
- Syar Phase VI Terrace Mining Project (south of Healdsburg, CA)

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2.0 SUMMARY

2.1 SUMMARY OF MAJOR CONCLUSIONS

This Draft EIR identifies a number of impacts that would result from the implementation of the proposed project. This summary section provides a brief narrative discussion of these impacts and a table that catalogues the impacts and mitigation measures. This section also contains a summary of the alternatives to the project as proposed. Full descriptions of impacts, mitigations, and alternatives are presented in Chapters 3 and 4 of this Draft EIR.

GEOLOGY, MINERALS AND SOILS

As detailed in Section 3.1, "Geology, Minerals and Soils" the project would not result in impacts related to expansive soils, use of septic tanks or alternative wastewater disposal systems, or to unique geologic features. The proposed mining activities would not expose people or structures to potential adverse effects, including the risk of loss, injury or death involving seismic events. Because the project area is generally flat, the potential for landslide hazards would not occur. In addition, the project would not be located in a geologic unit or soil that is unstable. Mining operations, including grading of access roads and skimming activities, could result in unstable slopes that expose people or structures to potential adverse effects. However, the project includes maintenance of setbacks, transplanting of vegetation, and use of straw wattles to retain the integrity and stability of the soil and reduce hazards. In addition, the project proposes mitigation measures that would reduce any remaining impacts to a less than significant level.

GEOMORPHOLOGY, HYDROLOGY AND WATER QUALITY

As discussed in detail in Section 3.2, Geomorphology, Hydrology and Water Quality", mining activities can result in a variety of adverse impacts, including downcutting of the channel, bank erosion and associated secondary effects (e.g., loss of streamside agricultural soils, increased sedimentation, loss of riparian vegetation, loss of riffle and pool fish habitat, loss of aquatic habitat and flooding), scour downstream of the mining area, and creation of a wide and shallow low flow channel that can elevate water temperatures, reduce groundwater resources and quality, and diminish water quality. The 1994 ARM Plan and its Program EIR therefore recommended mitigation measures, which the County adopted as operating standards, to implement a minimum baseline elevation below which mining cannot occur, restrict mining to the lower half of a bar, establish buffers, and require participation in the Russian River Gravel Mitigation Program and installation of erosion control. Subsequent monitoring data indicate that these measures have been effective at preventing impacts.

The project proposes to amend some of these requirements and thus could result in adverse impacts. However, Section 3.2, discloses that the proposed amendments would better protect and enhance hydrologic values and water quality, and imposes substantial measures to mitigate any remaining impacts. As a result, the project would result in substantial beneficial impacts on geomorphology, hydrology, and water quality, and would mitigate all adverse impacts to a less-than-significant level.

VEGETATION AND WILDLIFE

Section 3.3, “Vegetation and Wildlife” discloses that the proposed project could result in potentially significant impacts to resources including special-status plant, aquatic, bird, and bat species; riparian vegetation habitat; wetlands and waters of the United States; and County-protected tree species. In addition, the project could generate sediment and other pollutants that could adversely affect special-status aquatic species (California freshwater shrimp, western pond turtle, California red-legged frog, and foothill yellow-legged frog), and wetland ponds and backwaters of gravel bars, and increase the occurrence of invasive plant species such as giant reed (*Arundo donax*) and *Tamarisk* sp. But the project includes operating standards (e.g., setbacks, buffers, transplantation) and the AMS, which includes provisions for avoiding considerable stands of native riparian vegetation, that minimize potential effects on biological resources. Section 3.3 also imposes additional mitigation measures to reduce potential adverse impacts on these resources to less-than-significant levels. Section 3.3 also explains that the project would result in beneficial impacts on vegetation and wildlife, including habitat creation and improvements, through the creation of alcoves and oxbows.

FISHERIES RESOURCES

Mining activities can impact special-status and other fish species from fish stranding on mined bars, the loss or degradation of riffle and pool habitats, and loss or degradation of overhead cover and instream woody material from skimming and excavation activities. Section 3.4, “Fisheries Resources”, explains that the project proposes new goals, objectives, and standards that would protect and enhance fisheries resources, and includes both adaptive management and an enhancement program to create and restore fisheries resources. These amendments would reduce adverse impacts to fisheries resources, and result in beneficial effects by creating alcoves and oxbows, and riparian planting, among other enhancements. Section 3.4 also notes that the project could still result in potential adverse impacts to fisheries resources, and imposes mitigation measures, in Sections 3.2, 3.3, 3.4, and others. These measures would reduce adverse impacts to a less-than-significant level, while preserving the beneficial impacts of the proposed project.

CULTURAL RESOURCES

As discussed in Section 3.5, “Cultural Resources”, mining activities can result in the loss of as-yet unknown cultural resources, including human remains. The proposed mining is not expected to affect cultural resources, although grading above the river for access roads, or on the banks and terraces adjoining the river, could result in discovery of unrecorded cultural resources or human remains. This EIR imposes mitigation measures that would reduce potential impacts on cultural resources to less than significant.

TRAFFIC AND CIRCULATION

Section 3.6, “Traffic and Circulation” explains that the project would increase traffic on both public and private roadways from the use of large haul trucks and mining personnel vehicles. Some of the relevant sight distances and other physical design features do not conform to local and regional agency design standards and the project could thus increase hazards, as well as result in conflicts between project traffic and bicyclists. In addition, the project would increase wear and tear of existing rail crossings and private and public roadways used as haul routes. This EIR therefore imposes several mitigation measures to reduce potential impacts on traffic and circulation to less than significant. The EIR notes, however, that the contribution of project traffic to the Lytton Station Road curve would result in a significant unavoidable impact if the applicant is unable to acquire the right-of-way necessary to implement Mitigation Measure 3.6-3c. Implementation of that measure would reduce the impact to less-than-significant.

AIR QUALITY

Section 3.7, "Air Quality" discloses that the project would generate long-term operational emissions of criteria air pollutants (e.g., CO and PM_{10}) and precursors (e.g., ROG and NO_x) from sources including mining-related activities (e.g., excavation), off-road equipment, material transport, and worker commute exhaust emissions. With the exception of PM_{10}, all emissions would be below the standards of the Northern Sonoma County Air Pollution Control District (NSCAPCD). The project would generate more than 78 tons per year (TPY) of PM_{10}, however, exceeding the standard of 15 TPY. The project proposes substantial watering for dust control and other measures, and substantial additional measures are proposed as mitigation, but implementation of these measures apparently do not suffice to reduce emissions below the threshold.

The project would not expose sensitive receptors to significant emissions of toxic air contaminants. The project would generate CO_2 emissions that would contribute to global climate change effects, although emissions would not exceed the draft threshold of significance promulgated by the Bay Area Air Quality Management District (BAAQMD).

AESTHETICS

Section 3.8, "Aesthetics" explains that the project is proposed within a high sensitivity area that includes a scenic landscape unit and scenic corridors. Project-related mining equipment and access bridges would be visible (and visually dominant) from certain viewpoints during mining activities at one site at a time or, on rare occasions, up to two sites. Mining equipment and access bridges would be removed at the end of each operating season, and impacts would be temporary and limited.. Section 3.8 explains, however, that unobstructed and sustained views of Bars S-8 and S-9 would be available from Geyserville Bridge, a segment of southbound US 101, and some locations in the eastern hills. Mining equipment on these bars would only be visible during the mining seasons and, due to the clustering of mining activities, aesthetic impacts likely would not occur on Bars S-8 or S-9 in consecutive years. Nevertheless, consistent with the finding in the ARM Plan PEIR, this DEIR concludes that the project's impact on scenic landscape units and scenic corridors would be significant and unavoidable.

NOISE

Section 3.9, "Noise" explains that the project would expose sensitive receptors to noise levels in excess of significance thresholds as a result of mining equipment and heavy-duty truck traffic on both public and private roads. This EIR includes several mitigation measures to reduce potential impacts, but concludes that significant impacts would still occur at several receptors from mining equipment, and one receptor from truck traffic on Geyserville Avenue. The EIR also includes measures that, if implemented, would reduce noise impacts on private roadways to less–than-significant.

PUBLIC SERVICES AND UTILITIES

Section 3.10, " Public Services and Utilities" explains that the project would not increase water demand in excess of the available supply, nor generate sufficient wastewater to require any sewer system upgrades. In addition, the proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. Potential impacts associated with public services and utilities are thus less than significant and no mitigation measures are required.

HAZARDS AND HAZARDOUS MATERIALS

Section 3.11, "Hazards and Hazardous Materials" explains that accidental release of hazardous materials (e.g., fuels, lubricants, antifreeze etc.) could result in adverse impacts to soil, surface water, and/or groundwater. This EIR requires that a Spill Prevention Fueling and Lubrication (SPFL) Plan, which describes in detail the safety procedures, disposition of spill response equipment, as well as the procedure for response and notification in case a spill does occur, be available onsite. A SPFL Plan has been prepared for the project, although updates are required to comply with federal, state and local requirements and the ARM Plan. The update and implementation of the SPFL Plan would reduce potential impacts on soil, surface water, and groundwater to less than significant levels.

ENERGY

Energy use at the study area would consist of gasoline and diesel fuel to power heavy machinery and vehicles during five months of mining operation per year. The project would have a less than significant impact on energy resources and no mitigation measures are required.

LAND USE

Section 3.13, "Land Use" discloses that the proposed project would not result in the conversion of any Prime, Unique, or Statewide Important Farmlands. The project appears to be consistent with applicable land use plans, except as it relates to noise generated from on site mining equipment and mining-related haul trucks. In these areas, the project appears to conflict with SMARO and ARM Plan standards.

The project also requires amendments to many ARM Plan and SMARO standards to allow a different method of mining and a separate River Enhancement Plan (REP). The amendments are intended to improve the mining standards to preserve the geomorphic processes that protect aquatic habitat, wildlife and vegetation, and fisheries. Mitigation measures to be incorporated into the ARM Plan and mining ordinance would apply to the proposed project, as well as other future mining permits, or permit renewals, and would reduce potential impacts to less than significant levels, consistent with ARM Plan and SMARO standards.

RECREATION

Weekday boating, fishing, wildlife viewing and sunbathing would be affected by noise and visual impacts sight of mining equipment. Mining and REP streambank enhancements also could have a negative effect on recreation if they create an attractive nuisance, boating hazards or temporarily block the navigable channel. However, there is little crossover between the primary boating season and mining activities, and the bulk of recreation use would occur on the weekends, when mining activities would not occur. Mitigation measures in the ARM Plan PEIR would reduce impacts to recreation to less than significant.

GROWTH-INDUCING IMPACTS

Section 4, "Growth-Inducing Impacts" explains that the proposed project would not directly induce growth. It also explains that while aggregate supports new development, it does not remove an obstacle to growth or otherwise induce growth indirectly.

CUMULATIVE IMPACTS

Section 4.2, "Cumulative Impacts" explains that the majority of the project's adverse impacts would not be cumulatively considerable, or significant, when viewed in connection with the effects of past, current, and probable future projects. The section specifically notes that the project would result in potentially significant cumulative impacts to geomorphology, hydrology, and water quality; to vegetation and wildlife; to fisheries resources; and, to traffic and circulation. This EIR imposes mitigation measures, however, that would reduce all such impacts to a less-than-significant level, and in several cases result in beneficial impacts. Similarly, Section 4.2 notes that the project's contribution to cumulative recreational impacts would be considerable if it does not participate in the Recreation Enhancement Program, as required by the ARM Plan and mining ordinance, and therefore imposes Mitigation Measure 4.1 to require that participation.

As noted above, however, the proposed project would result in significant adverse impacts related to aesthetics and noise, consistent with the ARM Plan PEIR. The project would also result in significant impacts with regard to air quality (PM_{10} emissions) and traffic safety. These impacts also would be cumulatively considerable when viewed in connection with the effects of other past, present, and probable future projects, and there are therefore significant on a cumulative level, as well.

PROGRAM-LEVEL IMPACTS OF THE PROPOSED ARM PLAN AMENDMENTS

In consultation with the applicant, resource agencies, and other experts, the County has developed proposed amendments to the ARM Plan and mining ordinance to allow the consideration of instream mining projects that do not follow the standards of the ARM Plan, but ensure the maintenance or enhancement of aquatic and terrestrial habitat, bank stability, and minimization of bank erosion. The proposed amendments would modify specific objectives, standards, and requirements of the existing ARM Plan and mining ordinance related to instream mining. The amendments would revise existing ARM Plan Sections 7.2, "Goals and Objectives" and 7.5, "Instream Management Program."

As discussed in Sections 3.2, 3.3, 3.4, and Chapter 5 of this EIR, the proposed amendments are intended to improve the mining standards to preserve and enhance the geomorphic processes that protect aquatic habitat. Impacts could nevertheless result from the changes to operating standards for instream mining projects, as well as from adaptive management and enhancement plans. As noted above, the proposed amendments would require preparation of significant new site-specific environmental studies, implementation of enhancement plans (goals, actions, performance standards), and implementation of an adaptive management strategy. Implementation of the proposed amendments would result in several beneficial impacts on the natural environment.

Implementation of the amendments to the ARM Plan would result in significant, long-term, and Countywide beneficial impacts to hydrology and water quality, vegetation, wildlife, and other aquatic resources, and fish species and habitat. The amendments are not expected to result in impacts on agricultural resources, geology and soils, public service utilities, energy, land use, socioeconomics, or growth-inducing impacts.

SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS

This EIR identifies significant adverse impacts that would result from the proposed project, and imposes measures to mitigate them to the extent feasible. All project impacts can be mitigated to a level that is less-than-significant with the following exceptions:

- Impact 3.6-3 The project would substantially increase hazards due to a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Impact 3.7-1 The project would generate long-term operational (regional) emissions of criteria air pollutants and precursors. The impact of PM_{10} generation would be significant but the impact of generating other criteria pollutants and precursors would be less than significant.
- Impact 3.8-1 The project would result in a substantial impact on scenic landscape units or scenic corridors.
- Impact 3.9-1 Project operations would expose existing sensitive receptors to noise from equipment used on-site.
- Impact 3.9-3 Project haul truck traffic would expose one receptor on Geyserville Avenue to noise in excess of the threshold for interior noise.
- Impact 3.9-4 Project haul trucks along private roads would expose existing sensitive receptors to noise.

These effects would also be significant and unavoidable on a cumulative level.

These are the conclusions of the EIR preparers and County staff. If the Board of Supervisors ("Board") concurs that these impacts are significant and wishes to approve the project, then it must first adopt a Statement of Overriding Considerations pursuant to Section 15093 of the CEQA Guidelines. The Statement of Overriding Considerations would have to explain why the project is being approved despite these unavoidable adverse significant impacts.

During the public review process, the Board has the authority to determine that any of these impacts are, in fact, significant despite recommended mitigations. Ultimately, this EIR is the County's EIR, and the Board is responsible for its conclusions. If the Board believes, on the basis of data presented in this report, additional data provided during the public review process, or other public data available to the Board, that impacts should be identified as "significant," then the Board has the authority to determine such impacts are significant. In so doing, the Board must provide written support to justify its action(s). If additional impacts are deemed significant, then the Board must also include these impacts when issuing a Statement of Overriding Considerations if the Board decides to approve the project.

2.2 SUMMARY OF PROJECT ALTERNATIVES ASSESSMENT

Pursuant to CEQA Guidelines Section 15126.6, "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." A "no project" alternative is required under CEQA.

As described in Chapter 1, "Introduction and Project Description," the objectives of the proposed project include:

- Produce aggregate from an ARM-Plan designated site to implement the State and County policies of meeting local aggregate demand with local resources;
- Extend the life of permitted, locally-produced sources of high-quality aggregate that meets specifications for use in local infrastructure projects;
- Manage the skimming approach on an ongoing basis to provide a sustainable yield of aggregate while enhancing the biological and hydrological functions of the Russian River;
- Conserve valuable agricultural lands and help protect public infrastructure by maintaining flood channel capacity and reducing bank erosion through the removal of excess aggregate from gravel bars;
- Conserve quality riparian habitat, enhance fisheries, and remove invasive plant species by utilizing unique skimming techniques in selected locations; and
- Avoid traffic, air quality, and other environmental impacts associated with importing aggregate from locations outside of Sonoma County.

This EIR analyzes the following alternatives at length:

- Alternative 1 – No Project
- Alternative 2 – Gravel Mining in Compliance With The ARM Plan
- Alternative 3 – Gravel Mining within a 10-Year Time Period
- Alternative 4 – Gravel Mining at a Lower Volume
- Alternative 5 – Proposed Project Without the Mining of Bars S-9 and S-10 and Use of Haul Route 5

The alternatives that were eliminated from further consideration because they do not attain most of the basic project objectives include the following:

- Gravel Mining Elsewhere On The Russian River

ALTERNATIVE 1: NO PROJECT

The "no project" alternative is defined as "what would reasonably be expected to occur in the foreseeable future if the project were not approved" (CEQA Guidelines 15126(e)(2)). This EIR identifies a No Project Alternative, under which Syar would not implement the project as proposed. Syar would not conduct any mining activities within the proposed reach of the Russian River between Gill Creek to Jimtown Bridge. Without a source of high quality aggregate generated within the County, alternative sources of gravel would be required. At present, an import source of FCC grade aggregate that can economically be provided to the Sonoma County market has not been identified

Conclusions

None of the environmental effects identified for the proposed project would occur. The conditions within the Russian River would be defined by the natural forces of nature (flood events during the winter) as well as any land use changes adjacent to and upstream of the study area.

The demand for high quality aggregate would continue to exist within the County and alternative sources of gravel would be required. The import of aggregate from outside the County would result in indirect environmental effects such as increase use of fuel to transport aggregate material, and air pollutant emissions from haul truck traffic from the source area.

ALTERNATIVE 2 – GRAVEL MINING IN COMPLIANCE WITH THE ARM PLAN

Under this alternative, Syar would mine aggregate resources along the proposed reach of the Russian River in accordance with the operational standards and timeline defined by the ARM Plan. These operating standards are identified in Chapter 1, Introduction and Project Description, and would not include an AMS that allows for flexibility in the type of mining methods implemented.

Conclusions

Compared to the proposed project, potential effects would be shorter in overall duration but would be longer during the operating season, as construction would be permitted on Saturdays and to 10 p.m. throughout the work week. This alternative has the potential to increase land use disturbances (from increased noise, dust, traffic) to surrounding land uses during the operating season, although effects would occur for five years less than the proposed project. In addition, due to the differences in mining techniques, Alternative 2 would result in greater impacts to hydrological and biological resources. Mining activities under Alternative 2 would not actively enhance the biological and hydrological environment within the River. In general, Alternative 2 would result in more significant and unavoidable impacts than the proposed project.

ALTERNATIVE 3 – GRAVEL MINING WITHIN A 10-YEAR TIME PERIOD

This alternative would be similar to the proposed project, with the exception of the duration of mining. Syar would mine aggregate resources along the 6.5-mile Alexander Valley reach of the Russian River in accordance with the methods, standards, and AMS identified under the proposed project described in Chapter 1, Introduction and Project Description. However, Syar would limit mining to the 10-year duration allowed in the ARM Plan.

Conclusions

In general, impacts associated with increased dust, noise, and traffic would be similar in kind and intensity as the proposed project, because the extraction volume would remain the same under this alternative. However, mining under this alternative would disrupt adjacent sensitive receptors for a shorter overall period of time. Similarly, air quality and noise impacts would last five years less than would occur for the project. The significant and unavoidable impacts associated with the project would remain for this alternative. For most of the environmental issue areas (e.g., cultural resources, energy, and recreation), the timeframe of the mining permit would not change the level of impact.

ALTERNATIVE 4 – GRAVEL MINING AT A LOWER VOLUME

This alternative would be similar to the proposed project with the exception of the annual amount of aggregate produced each year. Syar would mine aggregate resources along the 6.5-mile Alexander Valley reach of the Russian River in accordance with the methods, standards, and AMS identified under the proposed alternative, including the daily and seasonal timing of mining activities. However, Syar would reduce its production from a maximum of 350,000 tons to less than 132,000 tons per year.

Conclusions

Most project impacts would be minimally influenced by the extraction volume, and would be similar to those identified for the proposed project. However, under this alternative, overall dust, traffic, and traffic noise would decrease. Accretion of material has the potential to constrict the river channel and reduce flow capacity at depositional areas, resulting in upstream flooding. The opportunities for habitat enhancement for fisheries would also be proportionally less.

ALTERNATIVE 5 – PROPOSED PROJECT WITHOUT THE MINING OF BARS S-9 AND S-10 AND USE OF HAUL ROUTE 5

This alternative would be similar to the proposed project with the exception of mining Bars S-9 and S-10 and use of Haul Route 5. Syar would mine aggregate resources along the 6.5-mile Alexander Valley reach of the Russian River (minus Bars S-9 and S-10) in accordance with the methods, standards, and AMS identified under the proposed alternative, including the daily and seasonal timing of mining activities. Syar would also eliminate the use of Haul Route 5 and instead use Haul Routes 1-4 and 6-8.

Conclusions

In general, impacts associated with increased dust, noise, and traffic, would be similar in kind and intensity as the proposed project. Alternative 5 would eliminate the project's significant unavoidable noise impacts on several receptors near Bars S-9 and S-10, and one receptor on Geyserville Avenue located adjacent to Haul Route 5. However, mining under this alternative would preclude mining of the two bars immediately upstream of the Geyserville Bridge and therefore contradict the applicant's objective and the County's public policy in protecting public infrastructure. In addition, the elimination of Haul Route 5 would divert access to other haul routes with greater distances, increasing emissions of PM_{10} and other criteria pollutants.

ALTERNATIVES ELIMINATED FROM FURTHER EVALUATION

Gravel Mining Elsewhere on the Russian River

This alternative would be similar to the proposed project, with the exception of the location of bars mined annually. Syar would mine aggregate resources along a different reach of the Russian River in accordance with the methods, standards and AMS identified under the proposed alternative, and would maintain the average target of 300,000 tons per year and a maximum of 350,000 tons per year. Syar does not have vested rights or ownerships elsewhere on the Russian River (beside the area in the Middle Reach it is currently mining) that would allow extraction of up to an average of 300,000 tons per year. Due to the lack of vested rights/ownership and ARM Plan restrictions, this alternative would be infeasible. As such, it was rejected from further consideration.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6 addresses the selection of the Environmentally Superior Alternative among the alternatives proposed. The environmentally superior alternative would be Alternative 1, No Project, as it would not result in the least number of significant and unavoidable impacts. CEQA Guidelines specify that if the environmentally superior alternative is the No Project alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Alternative 4 is determined to be the environmentally superior alternative because it would result in the next least number of significant unavoidable impacts compared to the other alternatives.

2.3 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

AREAS OF CONTROVERSY

Section 15123(b)(2) of the CEQA Guidelines requires that an EIR identify areas of controversy. The following issues have been raised by the public and/or agencies as being of the greatest concern:

- Whether instream mining creates a bedload trap and increases the sediment deficit in the Russian River, thus resulting in other effects (e.g., bank erosion and failure);
- Impact of mining on fisheries;
- The effectiveness of the AMS.

ISSUES TO BE RESOLVED

Section 15123 (B)(3) of the CEQA Guidelines require that an EIR identify issues to be resolved, including the choice among alternatives and whether or how to mitigate the significant impacts. Alternatives to the project are evaluated in Chapter 4,,"Topical Issues".

The issues to be resolved prior to implementation of the proposed project include the following, if the project is approved:

- The proposed project would result in significant and unavoidable adverse impacts that cannot be mitigated by feasible measures. As such, the County must determine whether to approve the project or a project alternative that would eliminate or reduce these remaining significant and unavoidable impacts. This EIR identifies project alternatives that would either reduce or eliminate one or more significant and unavoidable impact.
- Confirming each year's mining techniques, locations, and extraction volumes in coordination with Sonoma County PRMD and resource agencies based on the monitoring data, which includes incorporating the lessons learned from previous mining seasons.

2.4 IMPACT AND MITIGATION MEASURE SUMMARY TABLE

Environmental impacts of the Syar Alexander Valley Instream Mining Project are evaluated in Chapters 3 and 4 of this Draft EIR. Potential impacts of the project identified in this EIR are summarized in Table 2-1. The first column of the table describes the impact that would result from implementation of the project. The second column identifies the impact's level of significance before mitigation measures are implemented. Levels of significance include "beneficial," "less than significant" (LTS: less than significant as measured against significance criteria established for each area of impact), or "potentially significant" (PS: significant as measured against the significance criteria prior to implementation of mitigation measures). The next column lists the required mitigation measures or, in some cases, enhancement measures for the impact. Finally, the last column shows the significance of the impact after proposed mitigation measures have been implemented. Impacts are characterized as LTS or "significant and unavoidable" (SU: mitigation measures would not reduce impacts to a less than significant level compared to the significance criteria). Impacts are characterized based on their potential to affect the environment.

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
3.1-1	The project would not expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving seismic events.	LTS	None.	LTS
3.1-2	The project would not be located in a geologic unit or soil that is unstable. Mining operations, including grading of access roads and skimming activities, have the potential to result in unstable slopes that would expose people or structures to potential adverse effects, including the risk of loss, injury, or death.	LTS	None.	LTS

Note: LTS = Less Than Significant Impact SU = Significant Unavoidable Adverse Impact
PS = Potentially Significant Impact B = Beneficial

Table 2-1 Impact and Mitigation Summary					
Impacts		**Significance Before Mitigation**	**Mitigation**		**Significance After Mitigation**
3.2-1	Recent changes reducing the flow regime for the Russian River would cause lower low flow channel elevations to be used in establishing the baseline elevations, potentially causing lowering of the channel below previous baseline levels.	PS	3.2-1	Establish minimum baseline elevations for the Lower Alexander Valley mining reach at 1-foot above the higher of either the 1997 or 2007 water surface elevations adjacent to each bar as shown in Figure 3.2-8. Mining shall not be allowed below the minimum baseline elevation (1-foot above the higher of 1997 or 2007 water surface elevations). Mining shall be limited to bars that have accumulated sediment above the reference baseline elevation established in the first year prior to mining. If the water surface elevation is higher than the baseline elevation during implementation of mining activities, mining shall be limited to 1-foot above the water surface elevation at that time. These standards shall be incorporated into the ARM Plan and SMARO Amendments for the Lower Alexander Valley reach as well as the project conditions of approval.	LTS
3.2-2	The proposed ARM Plan amendment to retain 1/3 of the bar head as a buffer may not in some circumstances provide sufficient buffer area or height to prevent cutting through the bar head, potentially creating a high flow chute channel, disassociation of the bar from the bank or scour of the bar (which can result in a braided channel form), alter the course of the main channel, disrupt the processes that maintain the pools and riffles, increase	PS	3.2-2	Mining shall only be allowed downstream of the horizontal apex of the bar (or the lower half of the bar where no apex is apparent) with an exception to allow mining in the upper half of the bar only when the head of bar buffer is at least 8-feet above the water surface elevation measured from the upstream riffle crest at approximately 200 cfs flow, but in no case shall the head of bar buffer be less than one-third of the bar length. Mining will not be allowed in the upper half of the bar if the head of bar buffer is less than 8-feet above the water surface elevation, unless necessary to protect public infrastructure. Cut slopes shall be maintained at 10:1 from the bar head to the skim floor surface and shall be sloped along the skim floor surface at the same gradient as the low-flow river channel to drain to the downstream outlet at the bar tail. This standard shall be incorporated into the ARM Plan and SMARO Amendments for the Lower Alexander Valley Reach as well as the project conditions of approval.	LTS

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
	bank erosion and expose people and structures to increased risks from flooding.			
3.2-3	Side Bar Buffers: The proposed ARM Plan change in width of side bar buffers from 15 feet to 20 percent of the active channel width could potentially cause channel braiding, induce erosion of the bar head or cause other changes in the bar form and increase lateral bank erosion.	PS	3.2-3 Minimum side bar buffers shall be established at 15 percent of the maximum width of the active channel (widest point of the bar and low flow channel) but in no case should be less than 50 feet wide. The side bar buffer elevations should be no higher than 8 feet above the low water surface if mining in the upper half of the bar (upstream of the apex). If side bar buffer heights exceed the head of bar buffer height, they shall be graded to match the maximum head of bar buffer elevation, retaining a minimum 50-foot undisturbed buffer along the edge of bar. Buffers shall taper down in width at the downstream end of the bar to allow for drainage of the mining site. Under the Adaptive Management Strategy, the final height and width of the side buffers may be adjusted by the County, in consultation with the SRC and agencies, but in no case shall be less than 50 feet wide. These standards shall be incorporated into the ARM Plan and SMARO Amendments for the lower Alexander Valley Reach as well as the project conditions of approval.	LTS
3.2-4	The proposed outer bank buffers of 2.5 times the height of the bank or 30-feet, whichever is greater, measured from the top of the outer bank could allow mining at the toe of the outer bank slope and/or removal of existing riparian	PS	3.2-4 An undisturbed buffer area shall be established along the outer bank equivalent to 2.5 times the height of the bank or 30-feet whichever is greater measured from the <u>toe</u> of the outermost bank. The buffer shall be widened as necessary to include the dripline of existing riparian vegetation towards the low flow channel. An exception to the outer bank buffer can be made for enhancement components, such as channel alcoves, oxbows, inset floodplain benches or terraces, placement of large woody debris or bioengineered bank stabilization features. This	LTS

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Table 2-1 Impact and Mitigation Summary				
Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
	vegetation that serves to stabilize the slope, increasing potential for bank erosion or failure. This impact is potentially significant.		standard shall be incorporated into the ARM Plan and SMARO Amendments as well as the project conditions of approval.	
3.2-5	The impact of the Adaptive Management Strategy is considered potentially beneficial; however the effectiveness of the strategy relies upon the quality of the data collected to evaluate changing river conditions. In the absence of quality data, adjustments to mining methods and enhancement components could disrupt the geomorphic processes that form aquatic habitat and channel morphology, potentially causing shifts in the meanders, channel lowering and increased erosion.	PS	3.2-5 **Monitoring Requirements**: The following additional monitoring requirements shall be incorporated into the ARM Plan and related mining ordinance amendments for the lower Alexander Valley and, as appropriate, into the conditions of the project, to track gravel recharge rates, changes in sediment storage, bar area, channel stability, channel width, low water surface elevations, thalweg elevations, and pool depth. Monitoring shall be required at three different spatial scales and time periods, as follows: (1) Extended Monitoring Reach Survey: A baseline survey starting at the Jimtown Bridge (RM 46) to one-half the distance from Gill Creek to Cloverdale Airport (RM 56.5) shall be performed prior to commencement of mining and then after a 10-year or greater flood or once every 5 years if no such flood occurs. The measurements outside of the permitted reach shall be used as a control, to determine the changes attributed to natural variation as opposed to mining activities. (2) Permitted Mining Reach Survey: A permitted mining reach survey from RM 47.5 to RM 54 shall be conducted after a 5-year or greater flood or at least once every three years if no such flood occurs. (3) Local Mining Reach Area Survey: A local mining area	LTS

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Table 2-1 Impact and Mitigation Summary				
Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			survey that includes the mined bar (one pool), one bar upstream (two riffles and one pool), and one bar downstream (two riffles and one pool) from the mined bar (a total of four riffles and three pools) performed every year for a three-year period following mining, or until performance criteria are met or as approved by PRMD through adaptive management. The additional metrics set forth in mitigation measures 3.2-5a through 3.2-5g, below, shall be incorporated into the monitoring program for each of the survey areas and timeframes noted above. 3.2-5a **Sediment Storage**: To help monitor gravel recharge and other changes in channel topography, in each year following mining activities, the operator shall provide a report prepared by a qualified professional with a comparative analysis of pre and post mining topography, including estimates for the amount of change in bar elevation and a numerical calculation for sediment storage change from the prior year. Prior to the first year of mining, a baseline digital terrain model (DTM) shall be developed for the entire extended monitoring reach (RM 46 to 56.5). The baseline DTM shall have an aerial photograph of the project reach overlain with elevation contours measured at 1-foot intervals, so that channel planform and key features can be monitored over time. The DTM must include elevation data for the edge of water and above water areas to the top of bank. The DTM data shall use the same coordinate system as the County's long term cross section surveys and shall be accurate to within 1.0 foot horizontally and 0.5 feet vertically of actual 3-dimensional ground coordinates. The	

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			baseline DTM data shall be collected in the spring during low flow but before any mining commences. The extended monitoring reach channel survey above and below the proposed mining reach shall be repeated after a 10-year or greater peak flood (as measured at the Cloverdale USGS gauge), or once every five years if no such flood occurs. After mining commences, the operator shall prepare subsequent DTM surveys of the channel bars over the 6.5 mile permitted mining reach after a moderate flood event (defined as equal to or greater than a 5-year flow event measured at the Cloverdale USGS gauge) or once every three years if no such flood occurs. The permitted mining reach and extended monitoring reach surveys may be performed in permit years 6 and 11 to avoid back to back surveys. A 1-foot interval contour map and a graphic showing the change in elevation from the previous period, and a calculation of the change in sediment storage shall be prepared from the DTM data for all bars in the 6.5-mile monitoring area. The floodplain and banks above the bar surface elevation do not need to be surveyed again. The operator shall prepare an annual DTM survey of each mined bar, plus one bar upstream and one bar downstream of the mined bar, for a pre-mining baseline survey and for each of 3 years after mining commences. A 1-foot contour map of the mined bar and the upstream and downstream bars shall be prepared in each of the 3 years of monitoring along with a graphic showing a change in elevation from the previous year and a calculation showing the change in sediment storage volume. Annual DTM surveys of the local mined reaches will be included as part of the 3-year permitted reach survey in the	

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			post-mining period. In addition to the DTM monitoring data for baseline and post-mining monitoring, the operator shall also provide a mining plan to the PRMD and the SRC prior to each season's mining. The mining plan shall include: • A 1-foot interval contour map of bar in plan view showing pre-mining and proposed post mining contours, an outline of the proposed mining area, and the low-flow water surface elevation (at approximately 200 cfs). • Longitudinal profile over the complete bar length to low water. • Cross-sections, with at least one cross-section through head of bar, through the topographic high point of bar, through the lower-third of the mined area, and a cross-section oriented through the upstream riffle and head of bar. • A calculation showing the amount of aggregate to be removed. 3.2-5b **Channel Vertical Stability:** To address potential channel lowering (degradation or incision) resulting from mining, the operator shall provide an annual report prepared by a qualified professional that includes a comparative analysis of the pre and post mining water surface and thalweg elevations, and a map or aerial photograph that shows the locations of the monitoring and graphic plots of the thalweg and long-term cross-sections as follows:	

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			<u>Monitoring</u>**:** Monitoring of channel vertical stability shall consist of obtaining low-flow water surface elevation data (at approximately 200 cfs), and a thalweg elevations over the localized mining areas. The water surface elevation and thalweg shall be measured by collecting elevation data points at intervals not less than every 10 feet of channel. In addition to the water surface and thalweg monitoring data, cross-sections will be prepared from the DTM and thalweg survey data for the six long-term cross-sections in the lower Alexander Valley once every three years. The operator will provide a methodology to determine a correction factor for the change in water surface elevation due to changes in low flow releases in the Russian River (50 cfs rather than 200 cfs). The correction factor may be based on a developed stage-discharge rating curve from actual water surface elevation data, or by hydraulic modeling, or a combination of both, or other methods if agreed to by the PRMD and SRC. If the PRMD, SRC, and operator cannot agree on an appropriate method for correcting water surface elevation data collected at different discharges, then changes and trends in the thalweg elevation data will be considered in addition to the water surface elevation data. <u>Performance Criteria</u>**:** Channel vertical stability shall be evaluated at two spatial scales: 1) the entire permitted reach; and, 2) the localized mining area (defined as two riffle crests upstream and two riffle crests downstream of a mined bar). The performance criteria shall be:	

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			1) For the permitted mining reach the average water surface elevation at low flow water surface elevation shall not decrease in elevation by more than 0.5-foot below the averaged pre-mining water surface elevation; and 2) For the localized mining area (bounded by four riffle crests) the average water surface elevation at low flow water surface elevation shall not decrease by more than 0.5-foot below average pre-mining elevations; and 3) The collected thalweg elevation data will be compared to baseline data, and used to evaluate potential changes in vertical stability trends over a two year or greater period in accordance with the ARM Plan and SMARO. 3.2-5c **Bar Area:** To address potential decreases in the bar surface area the operator shall provide an annual report to PRMD prepared by a qualified professional. The report shall provide a comparative analysis of pre and post mining bar surface area: <u>Monitoring:</u> The mined bar surface area shall be measured at a consistent low flow level on an annual basis using aerial photographs and post-extraction "as-built" surveys. A report shall be provided to PRMD that includes all measurements, a key map (showing measurement locations), and bar topography. This shall be done prior to the first year of mining for a given mined bar and every year after the bar is first mined for three years following mining or until the performance criteria are met or as approved by PRMD through adaptive management.	

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			Performance Criteria: The bar areas within the permitted reach or at any individual mined bar shall not decrease by more than 15% relative to the pre-mining baseline survey. 3.2-5d **Low-Flow Channel Width:** To address potential increases in channel width the operator shall provide an annual report to PRMD prepared by a qualified professional. The report shall include a comparative analysis of pre and post mining measurements of the low-flow channel width: Monitoring: Low-flow channel width shall be measured using aerial photographs, field measurement, or data from the DTM. The channel width shall be measured at a consistent low flow level around the bar perimeter from the head of the bar to the tail (typically between the upstream and downstream riffle crest). A minimum of 12 measurements at approximately equally spaced intervals along the low-flow channel width of each mined bar shall be made. A report shall be provided to PRMD that includes all of the measurements and a map that is keyed to the location of the measurements. This shall be done prior to the first year of mining for a given mined bar and every year after the bar is first mined for three years following mining or until the performance criteria are met or as approved by PRMD through adaptive management. Performance Criteria: The average width of the low flow channel in the permitted mining reach or at each mined bar shall not increase by more than 15% compared with the pre-mining baseline.	

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Table 2-1 Impact and Mitigation Summary				
Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			3.2-5e **Pool Depth:** To address potential loss of pool depth, the operator shall provide an annual report to PRMD prepared by a qualified professional. The report shall provide a comparative analysis of pre- and post-mining residual pool depths: Monitoring: The residual pool depth is the water depth at point of zero flow (depth is controlled by the downstream riffle crest thalweg elevation). The maximum depths along the thalweg through each pool, starting from the downstream riffle crest (at thalweg elevation) and ending at the first riffle crest upstream of the pool shall be measured at spacing intervals of approximately every 10 feet or less along the pool length. The depth of flow over the controlling riffle crest thalweg downstream from each pool shall also be measured at the time of the survey. The average maximum residual pool depth is the average of the measured depths less the depth of flow over the controlling riffle crest. After the baseline year of monitoring, pool depths shall be measured adjacent to each bar and in a localized monitoring area defined as one pool upstream and one pool downstream prior to any mining. A report shall be provided to PRMD that includes all the measurements of pool depths and riffle crest depths over the thalweg, a profile graph, and map that is keyed to the location of the measurements. This shall be done prior to the first year of mining for a given mined bar and every year after the bar is first mined for three years following mining or until the performance criteria are met or as approved by PRMD through adaptive	

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Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			management. A re-survey of the baseline residual pool depths shall be performed for the entire monitoring reach (from Jimtown Bridge to RM 56.5) after a 10 year or greater flow event or every 5 years if no such flood occurs. Performance Criteria: 1) For the permitted reach, average residual pool depth shall not decrease by more than 5% of baseline or more than the average for the control area upstream of the mining reach. 2) For the localized mining area, residual pool depths shall not decrease by more than 15% at either the pool or more than the average for the control area upstream of the mining site. 3.2-5f **Adaptive Management:** If any of the performance criteria are exceeded in any given year, the operator shall hire a qualified professional to conduct an investigation and provide a report including proposed remediation measures to PRMD for review within 60 days of the monitoring report. The PRMD in consultation with the SRC and resource agencies will determine what steps should be taken to meet criteria, including but not limited to suspension of mining, additional studies or monitoring requirements, modified mining methods, limitations on the location of future mining activities, additional enhancements or other remediation measures. The operator shall suspend mining, conduct any necessary studies and incorporate changes to the monitoring program, annual mining plan or Enhancement/Reclamation Plan, and/or implement other remediation, as determined necessary by PRMD.	

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			3.2-5g **Aerial Photographic Monitoring:** To provide the information needed to monitor changes in the channel morphology, riparian, and aquatic habitat conditions, aerial photography will continue to be collected in the Lower Alexander Valley. <u>Monitoring:</u> The operator shall continue to fund a proportionate share of the County's annual aerial photography cost for the Lower Alexander Valley mining reach and a portion of the areas up and downstream, encompassing the distance from RM 46 to RM 56.5. The County will have the photography flown at a sufficient resolution to develop topographic elevations with an accuracy of plus or minus approximately 1 foot.	
3.2-6	Mining operations could cause downcutting of the channel bed and lower the groundwater.	PS	3.2-6 The annual surveys for channel bed vertical stability (see mitigation measure 3.2-5b, above) shall be evaluated for any potential trend in channel lowering that may affect groundwater levels. If the average low flow water surface elevation exceeds the performance criteria or the thalweg surveys indicate a downcutting trend occurring in the vicinity of mining activities, the operator shall hire a qualified professional to conduct an investigation and provide a report including proposed remediation measures to PRMD for review within 60 days of the monitoring report. The PRMD in consultation with the SRC and resource agencies shall determine what steps should be taken to meet the criteria, including but not limited to suspension of mining, additional studies or monitoring requirements, modified mining methods, limitations on the location of future mining activities, additional enhancements or other remediation measures. The operator shall suspend mining, conduct any necessary studies and incorporate changes to the monitoring program, annual mining plan or enhancement/reclamation plan, and/or implement other remediation as determined necessary by	LTS

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			PRMD. These mitigations shall be incorporated into the ARM Plan and related ordinance amendments for the lower Alexander Valley Reach as well as the conditions of approval for the mining permit.	
3.2-7	Over-extracting gravel bars could remove sediment at a rate faster than is naturally recharged, which could lead to channel incision, bank erosion, loss of riffles and pools, and general simplification of aquatic habitat. These changes could in turn expose land and structures to significant risk of failure and loss during flood events.	PS	Mitigation Measures 3.2-1 through 3.2-5e would limit potential for over-mining to occur.	LTS
3.2-8	Reduced Lateral Bank Erosion at Point Bars. Project related mining will tend to straighten the meander of the low flow channel and reduce the angle of attack on the bank opposite of the mined bar thus decreasing the shear stress and erosion potential immediately opposite the mined bar.	B	None.	B
3.2-9	Temporal Increase in Flood Capacity. Mining will	B	None.	B

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
	temporarily increase channel capacity and reduce potential for flooding.			
3.2-10	Project related mining may increase flow velocities and reduce the sediment supply immediately downstream of mined bar(s), thus increasing potential for scour and erosion on the riffle and bank below the mined area.	PS	3.2-10a The operator shall provide and implement a riparian vegetation planting plan for the areas within the mining reach to strengthen the banks along the river and increase riparian areas, subject to review and approval of PRMD. The area of riparian plantings shall be equivalent to 25 percent of the area of the mined bars (or about 25 acres total for the 15 year permit) and shall be implemented incrementally each year that mining occurs or prior to mining. Planting of areas larger than the mined bar may be banked for credit towards future mining sites in the mining reach. The estimated cost of the riparian planting should be the equivalent of $0.30/ton as adjusted annually by the construction cost index for inflation. 3.2-10b Where mining up to two-thirds of a bar or the area upstream of the apex (or upper half) of the bar has been approved, annual mining plans shall avoid mining of the bar immediately upstream in the same year or in the subsequent 2-year period unless a minimum of 2-feet of recharge has occurred on the mined bar and the bar head elevation has been stable as determined by PRMD in consultation with the SRC and resource agencies.	LTS
3.2-11	Project-related activities could result in the release of and exposure to hazardous contaminants, resulting in diminished water quality of the Russian River within the study area and in areas downstream of project	PS	3.2-11 Implement the Spill Prevention Fueling and Lubrication (SPFL) Plan for each individual mining site as part of the annual mining plan, as required by Mitigation Measure 3.11-1 in Section 3.11, Hazards and Hazardous. The SPFL Plan shall include the following measures: • All refueling and maintenance of mobile vehicles and equipment shall take place outside of the river channel,	LTS

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
	mining and enhancement activities.		mining areas and access roads. Fueling and maintenance activities associated with other less mobile equipment shall be conducted with proper safeguards to prevent hazardous material releases. • All chemical dust suppressants and slope stabilization chemicals or polymers, and sediment pond enhancement chemicals or polymers shall be EPA-approved and shall be used strictly according to the manufacturer's directions. An accurate accounting of the kinds and quantities of these materials used on the site shall be maintained by the operator.	
3.2-12	The proposed aggregate skim, road construction, and temporary bridge building for access to gravel bars could potentially alter water quality and aquatic habitat of the Russian River due to increased erosion, sedimentation, and turbidity.	PS	3.2-12a Temporary bridges, if required, shall provide a minimum clearance of four feet above the summer low-flow channel elevation and a minimum of 20 feet span across the waterway. Only clean, washed gravel shall be used as fill in the water for bridge abutments to get the minimum clearance and provide additional support. Gravel placed in the river shall be pushed out, rather than dropped in the river. Wet entries of the equipment shall be minimized. 3.2-12b The operator shall implement the following BMPs to minimize erosion at access roads and staging areas. (also see Mitigation Measure 3.3-1b): 1) Road surface drainage measures shall be implemented for any newly constructed roads to minimize erosion from drainage that originates from the road surface, cut-bank, or hillslope drainage that crosses the road alignment. Road surface drainage shall be out-sloped where feasible and incorporate rolling dips so that road surface is drained toward stable, vegetated areas, and away from gullies,	LTS

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			swales or other watercourses that drain toward the Russian River. 2) If insloping is the only option to drain surface runoff from the road surface, then an inside drainage ditch shall be constructed to remove surface runoff. Ditch relief culverts shall be designed and installed at intervals along the road that are frequently spaced to prevent gullying of the ditch and culvert outfall, and shall not discharge into a watercourse. 3) Ditch flow shall discharge into vegetated buffer areas or filter strips before reaching a watercourse. 4) All road construction activities shall be conducted during the dry season and completed by October 15. 5) Keep soil disturbance to a minimum during construction. Retain rooted trees and shrubs wherever possible. 6) Bare slopes created by construction activities shall be protected until vegetation can be established. Minimize surface erosion on exposed cuts and fills by mulching, seeding, planting, compacting, armoring, and/or benching prior to onset of fall rains. 7) Top soil and overburden from construction shall be stockpiled at least 200 feet away from the low flow channel of any perennial or intermittent stream and in a manner so that runoff is contained. 8) Any construction activities conducted near a flowing	

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Table 2-1 Impact and Mitigation Summary				
Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			channel shall use silt fences, straw bale silt dams, or similar measure to prevent sediment from entering the watercourse. 9) Unsurfaced seasonal use roads and staging areas shall not be used when wet; hauling shall be limited to dry periods. Physical barricades should be installed to block roads from winter use. 10) If excessive road dust collects during dry summer use, watering shall be used to prevent excessive loss of road surface materials. 11) Roads should be inspected at end of fall use season for potential erosion problems during winter rainy season. Road surface grading shall be conducted prior to October 15 if excessive road dust has collected or road ruts have developed. 3.2-12c During excavation of inset floodplain benches, alcoves or installation of large woody debris or bioengineered bank stabilization features, retain a 25-foot berm or plug at the end of the work area to isolate the work site from the flowing channel until the excavation is completed. A long reach excavator shall be used to pull the gravel plug away from the river channel. Remove the plug at the final excavation to limit the potential for large amounts of fine sediments to enter the waterway. Allow any turbid water in the alcove to settle before making the final below water excavation connecting to the thalweg.	

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			3.2-12d The mitigation measures, conditions of approval and BMPs shall be incorporated as specifications and notes on the annual mining plans. 3.2-12 All construction personnel involved in the mining project shall attend a pre-construction/mining conference with PRMD or the SRC to review the construction BMPs and conditions of approval.	
3.2-13	**Expanded Riparian Floodplain**. The project proposes creation of oxbows and floodplain benches or low inset terraces for riparian restoration and off-channel habitat. This is a beneficial impact.	B	None.	B
3.2-14	Proposed enhancement activities and projects, including excavation of alcoves (drainage channels connecting to tributary creeks), inset floodplain benches or terraces, installation of large woody debris and/or bioengineered bank stabilization features, could cause fine sediments to enter the active channel diminishing water quality.	PS	3.2-14a Construction staging and erosion control BMPs shall be used to contain sediments and prevent their delivery to the low flow channel. This shall include the use of BMPs built into the construction plan by use of site specific SWPPPs. 3.2-14b Excavated sediments shall be removed to a contained area outside of the channel and allowed to drain so that turbid water does not enter a flowing channel. 3.2-14c A specific construction and grading plan shall be prepared as part of the annual AMS mining plan process. 3.2-14d The operator shall isolate any future proposed bank enhancement sites that would require construction at or below the low flow water elevation, or where sediments could directly	LTS

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Table 2-1 Impact and Mitigation Summary				
Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			enter the river. Dewatering and diversion of the main channel shall be used to isolate enhancement sites. A qualified biologist shall be available to rescue and move fish from the dewatered section. Specific methods for dewatering and fish rescue shall be considered during the AMS planning process in consultation with CDFG and NMFS. 3.2-14e All enhancement sites shall be monitored for a period of 5 years following construction to determine that any erosion control features, or revegetation measures, are properly working, and are not causing new erosion or instability. Enhancement site erosion control or bank stabilization measures and features that may not be properly functioning shall be repaired during the 5 year monitoring period. However, alcoves, oxbows or floodplain benches or terraces shall not be re-entered after construction in order to maintain these features until the adjacent mined bar is ready to be mined again. 3.2-14f Vegetation used for riparian forest planting, streambank enhancements, or for revegetation of alcoves, oxbows or floodplain benches or terraces shall meet the performance criteria set forth under Mitigation Measure 3.3-3. Areas that do not achieve this criterion shall be replanted until the success criteria are met or adjusted through Adaptive Management. 3.2-14g The mitigation measures, conditions of approval and BMPs shall be incorporated as specifications and notes on the annual grading and mining plans. 3.2-14h All construction personnel involved in the enhancement projects shall attend a pre-construction conference with PRMD or the SRC to review the construction BMPs and conditions of approval.	

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Table 2-1 Impact and Mitigation Summary					
Impacts		**Significance Before Mitigation**	**Mitigation**		**Significance After Mitigation**
3.3-1	The proposed outer bank setback is not sufficient to prevent disturbance or removal of riparian vegetation at the secondary channel or toe of the outer banks.	PS	3.3-1	Revise the ARM Plan and mining ordinance to require the outer bank setback be measured from the toe of the outer bank slope and include the dripline of any existing riparian vegetation. This measure is identical to Mitigation Measure 3.2-4 in Section 3.2 "Outer Bank Buffers."	LTS
3.3-2	The proposed ARM Plan amendment to allow waiver of the established Russian River Gravel Mitigation Fund impact fees based on an Enhancement Plan could reduce mitigation requirements.	PS	3.3-2	Restoration Standards: During the life of the permit, the operator shall plant enhancement areas totaling at least 25% of the area of disturbance on the mined bars and access down the bank. Planting density for native riparian restoration, typically willow stakes, cottonwood trees, grasses, and sedges, shall be a minimum of 200 - 600 trees per acre from cuttings and native seed stock collected and grown from the local area, and shall achieve the required performance criteria in five years. Monitoring: Riparian plantings shall be monitored annually for 5 years or as determined necessary by PRMD in consultation with the SRC and resource agencies. Performance Criteria: At the end of the five year monitoring period, the planting area must show a minimum of 60% canopy cover. Areas that do not achieve this criterion shall be replanted until the success criteria are met or adjusted through Adaptive Management. Adaptive Management Strategy: Where restoration is occurring in areas cleared of invasive species, increased planting density may be required. If planting is occurring on terraces over 5 feet above the low-flow water surface elevation, irrigation may be needed during the initial period.	B

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			Financial Assurance: The REP shall be incorporated into the Reclamation Plan and will require financial assurances to be posted and updated annually.	
3.3-3	The proposed ARM Plan amendments to allow revised mining methods and enhancement activities could result in the removal or disturbance of special-status or protected species.	PS	3.3-3 **Revise the Mining Ordinance to Require Surveys of Special Status or Protected Species.** Prior to commencement of mining or construction of enhancement features, the operator shall hire a qualified biologist to conduct surveys for current special status or protected species in the affected area and within 500-feet including: • Special status plant species during their flowering season • Special status animal or aquatic species and their habitats • Nesting birds or roosting special status bats • Trees larger than 9-inches in diameter at breast height (dbh) • Jurisdictional wetlands Special status and protected species shall be avoided to the maximum extent feasible. Areas to be avoided shall be protected with fencing. Workers shall attend training with a qualified biologist to review any sensitive areas or mitigation requirements. If avoidance is not feasible, then a mitigation plan shall be submitted for review and approval of PRMD in consultation with the SRC and resource agencies and all required permits from the agencies shall be obtained. Wetland impacts shall require mitigation at a minimum 2:1 ratio or greater depending on the habitat values in conformance with the County's General Plan.	LTS
3.3-4	The project could result in the removal or disturbance	PS	3.3-4 **Conduct Special-Status Plant Surveys Before Mining.** The operator shall conduct special-status plant surveys at the	LTS

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Table 2-1 Impact and Mitigation Summary				
	Impacts	**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
	of special-status plant species.		proposed mining site, including the vegetated portions of the access routes, before any mining-related activity commences. These surveys shall be conducted by a qualified biologist during the flowering period for each special-status species. Surveys may be conducted within 5 years of the start of mining activities at a given bar, but all surveys must be complete prior to the start of mining activities. If no special-status plant species are found to inhabit the site, no further mitigation measures would be necessary. If special-status plants are discovered in the proposed mining site and/or access area, individuals shall be clearly marked and avoided to the extent feasible. If special-status plants found during focused surveys cannot be completely avoided, consultation with DFG, USFWS, or both shall be initiated, depending on the listing status of the plant. During this consultation, a mitigation plan shall be developed and approved by the relevant agencies to avoid all adverse impacts. This plan shall include worker education and erecting protective fencing (for indirect impact). The plan may also include locating and enhancing another off-site population of the species, or transplanting the population to suitable nearby habitat. Criteria for plant population survival and transplantation methods and success shall be specified within the mitigation plan. Mining activities shall not commence until the mitigation plan is in place.	
3.3-5	Project and river enhancement plan (REP) activities could result in direct take or indirectly affect special-status aquatic	PS	3.3-5a **Educate Mining Personnel on Special-Status Species.** A worker environmental awareness program shall be conducted annually by a qualified biologist to provide mining personnel with information on their responsibilities with regard to the western pond turtle, California red-legged frog, and foothill	

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Table 2-1
Impact and Mitigation Summary

	Impacts	Significance Before Mitigation	Mitigation	Significance After Mitigation
	species. Indirect affects would result from the loss of quantity and quality of habitat in the Russian River, wetland ponds, and backwaters of gravel bars for these species.		yellow-legged frog. At a minimum, the training shall describe the species and their habitats, the importance of the species and their habitats, measures that are being implemented to conserve these species, and the boundaries within which mining and enhancement activities would occur. 3.3-5b **Survey Site for Western Pond Turtle.** Prior to mining or enhancement activities in areas with potential habitat, the operator shall annually survey potential western pond turtle habitat within two days of the commencement of project activity for western pond turtle adults, juveniles, and nests. Nesting sites containing eggs or hatchlings may be immediately adjacent to wetlands or extend up to 1600 feet away from wetland areas in open grassland uplands. Adults and subadults may utilize any portion of the mining sites, including the aquatic habitat, basking sites near or on the edge of river, and accessible terrestrial habitats between the river and the agricultural fields. If no western pond turtles or nests are observed in potential habitat, mining and REP activities may proceed. If western pond turtle nests are found, a buffer area of 50 feet shall be established around the nesting site until the turtles are no longer occupying the nest. These buffers shall be indicated by temporary fencing. If western pond turtle adults or subadults are found either during the surveys or thereafter, the turtle(s) must be allowed to move out of the project area on their own, or a DFG-approved biologist shall move the turtle(s) to the nearest suitable habitat at least 300 feet outside the active mining area. A qualified biologist shall be present at active work sites until	

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Impacts		Significance Before Mitigation		Mitigation	Significance After Mitigation
				the initial habitat disturbance has been completed. A qualified biologist shall be on call and capable of responding to the work site to determine the presence of western pond turtle and relocate turtles as needed. The operator shall designate a person to monitor on-site compliance with all mitigation measures. The DFG-approved biologist shall ensure that the monitor receives proper training. The on-site monitor shall check daily for animals under any equipment as well as in the construction area and access route prior to the start of mining or REP activities for that day.	
			3.3-5c	**Survey Site for Foothill Yellow-Legged Frog** A pre-construction survey shall be conducted within two days of mining or enhancement activities that occur in areas with potential foothill yellow-legged frog habitat. A qualified biologist shall survey for adults, tadpoles, and egg masses. Habitat to be surveyed shall include those aquatic features and areas within 15 feet of any mining or enhancement activities. If foothill yellow-legged frog are not observed in potential habitat, mining and REP activities may proceed. If foothill yellow-legged frog egg masses are found, a buffer area of 50 feet shall be established around the area of occurrence and CDFG shall be notified. Buffers shall be indicated by temporary fencing. If foothill yellow-legged frog adults or subadults are found either during the surveys or thereafter, the individuals shall be allowed to move out of the area on their own prior any further mining activity within 100 feet of the animals location. Alternatively, a DFG-approved biologist may move the frog(s) to the nearest suitable habitat outside the active mining area prior to mining	

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Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			activities. A qualified biologist shall be present at active work sites until the initial habitat disturbance has been completed. A qualified biologist shall be on call and capable of responding to the work site to determine the presence of foothill yellow-legged frog and relocate frogs as needed. The operator shall designate a person to monitor on-site compliance with all mitigation measures. The DFG-approved biologist shall ensure that the monitor receives proper training. The on-site monitor shall perform a daily check for frogs within the construction area and access route within 30 feet of aquatic habitat prior to the start of mining or REP activities for that day. 3.3-5d **Survey Site for California Red-Legged Frog** A pre-construction survey shall be conducted within two days of mining or enhancement activities that occur in California red-legged frog habitat or other activities that may result in take of the species. A qualified biologist shall survey all aquatic features, the perimeter around those aquatic features, and densely vegetated riparian portions of the project site. In the unlikely event that California red-legged frog is found during the preconstruction survey, the biologist will contact the USFWS and CDFG immediately. All mining shall cease until authorization from USFWS and CDFG is granted and the operator implements all measures identified by the agencies to avoid all adverse impacts to the California red-legged frog. 3.3-5e **Survey Site for California Freshwater Shrimp.** A pre-construction survey shall be conducted within two days of mining or enhancement activities that occur in California freshwater shrimp habitat or other activities that may result in	

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Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			take of the species. A qualified biologist shall identify and survey areas of possible California freshwater shrimp habitat within 100 feet of proposed mining or enhancement areas, especially those areas that have vegetation overhanging undercut river banks and posed above nearly still water bodies. In the unlikely event that California freshwater shrimp is found during the preconstruction survey, the biologist will contact the USFWS and CDFG immediately. All mining shall cease until authorization from USFWS and CDFG is granted and The operator implements all measures identified by agencies to avoid all adverse impacts to the California freshwater shrimp. 3.3-5f **Remove Trash that May Attract Predators.** During work activities, all trash that may attract predators shall be properly contained, removed from the worksite, and disposed of daily. Following mining activities, all trash and debris shall be removed from work areas. 3.3-5g **Update the Spill Prevention Fueling and Lubrication Plan.** See Mitigation Measure 3.11-1 in Section 3.11, "Hazards and Hazardous Materials." Implementation of that mitigation measure shall be applied to this impact.	
3.3-6	The project could temporarily diminish the habitat quantity and quality for nesting and migratory special-status bird species.	PS	3.3-6 **Survey for Special-Status Birds and Establish Buffer if Necessary.** Before mining activities commence, the following measures shall be implemented for nesting birds. The operator shall prune, remove, or transplant vegetation after September 1 and before February 15 of any mining year, when bird nesting is most likely avoided. If this is not feasible, then a qualified biologist shall survey the proposed mining area and access routes before commencement of mining activities to verify the presence or absence of nesting birds. Areas where vegetation	LTS

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Impacts		Significance Before Mitigation	Mitigation		Significance After Mitigation
				may be removed along haul routes shall also be surveyed. The survey distance is 500 feet from the mining area for nesting raptors and 250 feet for special-status bird species. If nesting birds are not found, no further action shall be necessary. If the survey indicates the potential presence of nesting birds, The operator shall contact DFG to establish a buffer around the nest tree. Buffers shall include a minimum exclusion buffer of 25 feet for songbird nests, and 200–500 feet for raptor nests, depending on the species and location. Buffer zones shall remain until young have fledged. If it appears that mining activities may cause nest abandonment, mining activities must cease until either the young are able to fly well enough to avoid mining areas or consultation with DFG has determined alternative measures.	
3.3-7	Project mining activities could diminish habitat quantity and quality for special-status bat species.	PS	3.3-7	**Survey for Roosting Special-Status Bats.** Before removing any trees greater than 12 inches in diameter (dbh), a qualified bat biologist shall conduct a survey for roosting pallid and Townsend's big-eared bats. If mining activities would occur near the Geyserville Bridge or travel under the bridge would be required to access the proposed mining site, bat surveys shall be conducted. In addition, surveys shall be conducted at any other structures that may be bat roosting sites closer than 200 feet from any mining activity. If no active roosts are found, no further action would be warranted. If a maternity roost is located, the qualified bat biologist shall delineate a 200-foot buffer zone around the roost. If active maternity roosts or hibernacula are found, the project shall be redesigned to avoid the loss of the tree occupied by the roost if feasible. DFG shall also be notified of any active nurseries in	LTS

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Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation		Significance After Mitigation
				the mining zone. If either a maternity roost or hibernaculum is present, the following additional measures shall also be implemented: If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree, removal of the tree shall commence only before maternity colonies form (i.e., before March 1) or after young are flying (i.e., after July 31), and not actively using the roost If a nonbreeding pallid or Townsend's big-eared bat hibernacula is found in a tree scheduled to be removed, the applicant will apply for a memorandum of understanding (MOU) with DFG. The bats shall be safely evicted within the guidelines of the MOU under the direction of a qualified bat biologist by opening the roosting area at dusk to allow air flow through the cavity, or by an alternative measure that does not result in adverse impacts. Tree removal shall then follow no later than the following day (i.e., there would be not less than one night between initial disturbance for airflow and the removal). This action should allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight.	
3.3-8	The project could result in the loss of naturally occurring riparian vegetation habitat on the portions of the gravel bars and floodplains that would be skimmed, and the access to those areas.	PS	3.3-8	**Supplement the AMS for Riparian Vegetation.** Syar shall delineate significant stands (greater than 100 square feet with at least 25% of the stems greater than one inch in diameter at breast height) of native riparian vegetation within the proposed extraction footprints on their mining plans and shall either adjust the extraction boundaries to avoid disturbance or transplant to suitable locations identified in their annual mining plans. Transplantation and/or revegetation must take place in locations where (1) the riparian forest is less than 100 feet wide,	

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				(2) where suitable conditions exist and habitat functions and values can be restored, (3) in areas where invasive vegetation has been removed and conditions are sufficient for growing native riparian vegetation or (4) where bank stabilization is desired and approved by the agencies. Planting density for native riparian restoration, typically willow stakes, cottonwood trees, grasses, and sedges, shall be a minimum of 200 - 600 trees per acre from cuttings and native seed stock collected and grown from the local area. Monitoring: Transplanted and riparian vegetation shall be monitored for a period of 5 years or until success criteria are met. Performance Criteria: All plantings (transplants and new plantings) shall be maintained as necessary during the monitoring period to provide 60% canopy cover.	
3.3-9	The project could result in the loss and degradation of and temporary degradation to waters[2] of the United States and of the state.	PS	3.3-9a	**Survey for Wetlands and Jurisdictional Waters.** Jurisdictional waters outside the OHWM may shift in location or may appear or disappear from year to year. Before any mining activities commence for that mining year, a preliminary survey of wetlands and waters of the United States and the state shall be conducted for affected areas outside the OHWM to determine the need for a jurisdictional delineation. If no wetland areas are detected, no further action is required. If the preliminary survey of the proposed mining and/or enhancement area identifies potential wetlands and waters, the wetland areas shall be avoided, or a qualified biologist shall perform a wetland delineation per the USACE regulations and submit the delineation to USACE for verification. Once verified, copies of	LTS

[2] Reference to "waters" includes wetlands.

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			the delineation shall be provided to DFG and the North Coast RWQCB. 3.3-9b **Avoid Jurisdictional Waters and Provide Compensatory Mitigation for Loss of Waters.** Consistent with Section 404 of the CWA, which requires that projects avoid or minimize adverse effects on jurisdictional waters, these areas shall be avoided to the greatest extent feasible. Where wetlands and other waters cannot feasibly be avoided and lead to permanent impacts, compensatory mitigation, pursuant to Measure 3.3-6c, shall ensure that the project would cause no net loss of wetland functions and services. Syar shall provide compensatory mitigation for permanent loss of waters of the United States and state as required by regulatory permits issued by USACE, the North Coast RWQCB, and DFG. 3.3-9c **Obtain and Comply with Required Permits, Certifications, and Agreements.** Water quality certification and/or a waste discharge requirement from the North Coast RWQCB would be required pursuant to Section 401 of the CWA and/or the Porter-Cologne Water Quality Control Act. A permit through USACE for discharge of dredged and fill material into waters would be required pursuant to Section 404 of the CWA. In addition, DFG has jurisdiction pursuant to Section 1602 of the Fish and Game Code; thus, a streambed alteration agreement from the DFG would be required. Terms and conditions of the permits normally include measures to protect and maintain water quality, restore work sites, and mitigate for temporary and permanent wetland impacts. Through the AMS process, which calls for participation of the above resource agencies, Syar shall obtain all required permits before implementation of the project and shall comply with all permit conditions.	

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			In addition to the above measures, implementation of Mitigation Measure 3.11-1 in Section 3.11, "Hazards and Hazardous Materials," shall be applied to this impact.	
3.3-10	Mining activities, including skimming and construction of access routes to gravel bars, and enhancement activities could result in loss of County–protected tree species, thus conflicting with local plans and policies.	PS	3.3-10a **Avoid Large Trees on Access Routes.** Syar shall select access routes to avoid, to the greatest extent feasible, mature trees greater than 9 inches dbh. 3.3-10b **Implement County Code Requirements for Removal of Protected Trees.** Syar shall comply with the Sonoma County Tree Protection and Replacement Ordinance, which identifies the mitigation requirement for removal of protected trees greater than 9 inches dbh as well as conditions for conserving protected trees. Relevant conditions of the Code are as follows: i. Syar shall clearly show on all improvement plans whether protected trees are to be retained or removed , and place a note on the plans that "Construction is subject to requirements established by Sonoma County to protect certain trees." ii. Syar shall clearly delineate every tree designated for protection with a substantial barrier (usually orange plastic netted construction fencing) at the protected perimeter, or limits established during the permit process. The delineation markers shall remain in place for the duration of all work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of brush, earth and other debris as to avoid injury to any protected tree. iii. When site work must encroach upon the protected perimeter of a protected tree, special measures shall be	LTS

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			incorporated to allow the roots to obtain oxygen, water and nutrients. Tree wells or other techniques may be used where advisable. No changes in existing ground level shall occur within the protected perimeter unless a drainage and aeration scheme approved by a certified arborist is utilized. iv. Syar shall not store or dispose of oil, gasoline, chemicals, or other substances that may be harmful to trees, within the drip line of any tree, or any other location on the site from which such substances might enter the dripline. v. If any damage to a protected tree should occur during or as a result of work on the site, the County shall be promptly notified of such damage. If a protected tree is damaged so that it cannot be preserved in a healthy state, the planning director shall require replacement in accordance with the arboreal value chart. If on-site replacement is not feasible, the applicant shall pay the in-lieu fee to the tree replacement fund. vi. Compaction of soils or stockpiling or parking of vehicles and equipment within the dripline or protected perimeter shall be prohibited.	
3.3-11	Soil disturbance from mining activities and removal of vegetation could increase the occurrence of invasive plant species such as giant reed and tamarisk, which would be in conflict with Goal RC-5.1 of the *Sonoma County General Plan*. This goal aims to protect the	PS	3.3-11 Syar shall work with the Sotoyome Resource Conservation District to identify appropriate measures to remove and prevent the spread of tamarisk and giant reed from the proposed mining and access areas. Appropriate methods of removal for the giant reed are described in the Mitigated Negative Declaration for the giant reed removal program (SRCD 2004) and amendment No. 1 to that document (SRCD 2007) and summarized below. i. Initial removal of large stands of giant reed shall involve the cutting of stalks to within 12 inches of the ground by hand,	LTS

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	county's diverse natural habitats by protecting biotic resources from development activities.		flail mower, or similar mechanized apparatus. ii. To prevent regrowth from removed biomass, all cane material shall be removed off-site and placed on nonpermeable surfaces to prevent rerooting, or burned or mulched into pieces of less than 2 inches in length. iii. In smaller or confined areas, multiyear tarping may follow the initial removal of cane material as well as application of the herbicides glyphosate or Imazapyr in areas not adjacent to waterways. iv. In larger stands and in the active floodplain, manual or mechanical root removal shall follow the initial removal of cane material. Roots and rhizomes shall be disposed of off-site. v. Removal of tamarisk would generally be similar to that identified for giant reed. The Nature Conservancy (1998) developed guidance for the removal of tamarisk. When using the cut and herbicide method, the following chemicals shall be used: triclopyr herbicides Garlon 4® or Pathfinder II®. When herbicides cannot be used, the entire plant, with the rootball intact, shall be removed and disposed of off-site. Regular follow-up visits shall occur in the following seasons to assure the positive removal of the invasive plants, with retreatment occurring if necessary.	
3.4-1	Lowered minimum baseline elevations to 1 foot above the low flow channel would maintain the channel vertical stability such that the geomorphic processes that	PS	None.	LTS

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	maintain pool and riffle habitat would not be disrupted.			
3.4-2	Deeper excavations in the mining area and construction of the alcoves, oxbows, floodplain benches or terraces could create depressions that entrap and result in a direct loss of fish, including endangered and threatened salmonids.	PS	3.4-2 Each spring after mining or construction of enhancement features, the operator shall hire a qualified biologist to inspect each mined bar and excavated enhancement area after each high flow event equal to or greater than a 2-year storm. The biologist shall capture and release any stranded fish under permit with CDFG and/or NMFS and make recommendations for correcting the slope to drain properly. The inspections shall be conducted for a minimum of 3 years following mining or construction. The operator shall be required to complete any corrective actions necessary to prevent fish stranding. These measures shall be incorporated into the mining ordinance (SMARO) Section 26A-11-020 (b).	LTS
3.4-3	Reduced buffers at the head of bar could cause erosion or scour of the upstream and downstream riffles as well as increased sedimentation that could degrade spawning gravels.	PS	The mitigation measures in Section 3.2, "Geomorphology, Hydrology, and Water Quality", including Mitigation Measure 3.2-2 shall apply to erosion and scour of the upstream and downstream riffles as well as increased sedimentation.	LTS
3.4-4	The increase in the side bar buffer standards would maintain the geomorphic processes that form and maintain pool habitat for endangered and threatened salmonids.	B	None. The change in required side bar buffers would benefit fisheries resources by maintaining pool habitat for threatened and endangered salmonids. See Mitigation Measure 3.2-3 for recommended minimum and maximum side bar buffers and other criteria**.**	B

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
3.4-5	The proposed AMS proposes to rely on monitoring data that is not adequate to detect changes in aquatic habitats related to mining or enhancement activities. These changes could result in disruption of sediment transport processes resulting in loss or degradation of aquatic habitat for special status fish or other aquatic species.	PS	3.4-5a **Riffle and Pool Habitats.** To address the potential impacts on riffle and pool habitats, the operator shall provide pre- and post-mining surveys of riffle and pool habitat as defined. The operator shall include a comparative analysis of pre- and post-mining fisheries habitat in the monitoring reports. Baseline monitoring shall be conducted for the permitted mining reach in the first year prior to mining after a 5-year or greater flood, or once every 3 years if no such flood occurs. **Riffle Habitat** Monitoring: Riffle habitat shall be monitored through redd[3] counts and substrate grain size distribution measurements. Redd counts shall follow protocols described in Flosi et al. (1998). Substrate grain size distribution measurements shall use the freeze-core method. Performance Criteria: • The total redd counts shall not decrease more than 20% relative to the population abundance (migrating adults) in the baseline period. • The average riffle substrate grain size distribution trend, over a 3-year or greater period shall not increase the amount of fines (<1.6 mm) by more than 5% of baseline over the permitted reach. **Pool Habitat Quantity** Monitoring: Pool habitat quantity shall be measured in number and area of pools deeper than 3 feet and mapped on	LTS

[3] Redds are spawning nests made by fish, especially a salmon or trout.

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			aerial photographs. Performance Criteria: Average number and area (deeper than 3 feet) of pools shall not decrease over the permitted reach. Pool habitat quantity shall not decrease by 15% or more at the localized mining area. **Pool Habitat Quality** Monitoring: Pool habitat quality shall be monitored through measurements of residual pool depth (the difference between the downstream riffle crest elevation and the elevation at the deepest part of the pool). Performance Criteria: • Average residual pool depth for the permitted reach shall not decrease more than 5% of baseline or more than the average for the control area upstream of the mining reach. • Residual pool depths at each pool in the localized mining area shall not decrease more than 15% or the average for the control areas upstream of the mining site. 3.4-5b **Adaptive Management:** If any of the performance criteria for riffle or pool habitat are exceeded in any given year, it indicates that impacts to aquatic habitats may be occurring. The operator shall hire a qualified fisheries biologist to conduct an investigation and provide a report including proposed remediation measures to PRMD for review. The PRMD in consultation with the SRC and resource agencies will determine what steps should be taken to address habitat concerns, including but not limited to: suspension of mining, additional studies or monitoring requirements, modified mining methods, limitations on the location of future mining activities, additional	

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			enhancements and/or other remediation measures. The operator shall conduct any necessary studies and incorporate changes to the monitoring program, annual mining plan or Enhancement/Reclamation Plan, implement other remediation, and/or suspend mining to meet the performance criteria.	
3.4-6	The proposed ARM Plan amendment to allow waiver of the established Russian River Gravel Mitigation Fund impact fee based on an Enhancement Plan could reduce mitigation requirements.	PS	Mitigation Measure 3.3-2 in Section 3.3, "Vegetation and Wildlife" establishes restoration standards, monitoring requirements, performance criteria and financial assurances that will substantially reduce the impact of enhancement plans to a less-than-significant level.	LTS
3.4-7a	The project's proposed enhancement activities would result in long-term beneficial effects on aquatic habitats and the fish community in the Russian River.	B	None. The impact of enhancement activities provides both short-term and long-term beneficial impacts to fisheries resources.	B
3.4-7b	Instream mining and enhancement activities could result in increased turbidity and downstream sedimentation, which could reduce or adversely affect fish habitat and fish populations, including anadromous salmonids and other native and special-status fish species.	PS	3.4-7a **Supplement the AMS with Performance Criteria for Riffle and Pool Habitats.** This measure is identical to Mitigation Measure 3.4-5a above, and shall be applied to this impact. 3.4-7b **Supplement the AMS with Performance Criteria for Channel Width.** This measure is identical to Mitigation Measure 3.2-5d in Section 3.2, "Geomorphology, Hydrology and Water Quality," and shall be applied to this impact.	LTS

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
3.4-7c	Instream mining practices could adversely affect the function of riffle and pool habitats through project-related indirect effects on sediment transport and deposition processes. These effects include exacerbating sedimentation of the substrates, reducing pool volumes, changing hyporheic flow patterns, reducing habitat complexity and causing barriers to adult migration, diminishing adult holding and juvenile rearing habitats, and reducing benthic macroinvertebrate production.	PS	Mitigation Measures 3.4-5a and 3.4-5b would apply to this impact.	LTS
3.4-8	The project would not result in direct loss of fish, including special-status species, from bridge installation or removal, or enhancement activities.	LTS	None.	LTS
3.4-9	The project could result in the direct loss of fish, including special-status species, from fish stranding on bars that have been mined and/or enhanced.	PS	3.4-9a **Finish Grade the Floor of the Skimmed Area to Promote Complete Drainage.** End-of-season bar reclamation shall include a finish grade at the floor of the bar with a minimum 0.20% longitudinal slope and a 0.25% horizontal cross-slope gradient that is consistent with recommendations determined by the SRC.	LTS

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Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			3.4-9b **Supplement the AMS with Actions Addressing Fish Stranding.** As part of the proposed AMS, the following specific actions shall be conducted to address the potential fish stranding impact: Monitoring: For the first 3 years following the completion of mining at an individual bar, visual surveys of the bar shall be conducted by a qualified biologist (possessing the necessary permits to conduct fish relocation, if needed) after at least one high flow event per year that inundates the mined bar area, and after every high flow event equal to or greater than the 2-year storm. The purpose of these surveys is to identify the extent of any depressions and associated ponded areas that cannot drain to the low-flow channel. Photographic documentation will be conducted, as necessary, to document the condition of the mined bar area. Reporting: Following each year when monitoring is conducted, a letter report shall be submitted to the SRC summarizing the overall condition (with an emphasis on bar topography and identification of depressions) of the mined bar and any changes that have occurred since the previous report. The report will assess the potential for fish stranding. Performance Criteria*:* If depressions or associated ponded areas that cannot drain to the low-flow channel are found, or other conditions exist that could lead to fish stranding, the SRC shall make recommendations to PRMD to correct the situation. Syar shall suspend mining or incorporate changes to the annual mining plan or Reclamation Plan, and/or implement other	

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			remediation, to meet these criteria. The ultimate goal is that the mined bar and associated drainage features (e.g., horseshoe skim, alcoves, oxbows) function naturally to provide beneficial floodplain/bar habitat conditions with minimal human intervention and maintenance.	
3.4-10	The project could result in substantial loss or degradation of overhead cover and instream woody material from skimming activities and post-mining processes.	PS	3.4-10a **Supplement the AMS with Performance Criteria for Bar Area.** This measure is identical to Mitigation Measure 3.2-5c in Section 3.2, "Hydrology and Water Quality," and shall be applied to this impact. This measure would protect against loss of overhead cover and instream woody material by providing protection of the bar area (where the cover and woody material exists). 3.4-10b **Supplement the AMS with Performance Criteria for Channel Width.** This measure is identical to Mitigation Measure 3.2-5d in Section 3.2, "Hydrology and Water Quality," and shall be applied to this impact. This measure would protect against loss of overhead cover and instream woody material by providing protection of the banks (where the cover and woody material exists). 3.4-10c **Supplement the AMS with Performance Criteria for Riparian Vegetation.** This measure is identical to Mitigation Measure 3.3-8 in Section 3.3, "Vegetation and Wildlife," and shall be applied to this impact.	LTS
3.4-11	Project-related activities could result in the release and exposure of contaminants, resulting in adverse effects on aquatic	PS	3.4-11 **Develop (Update) and Implement Spill Prevention Fueling and Lubrication Plan (SPLP).** This measure is identical to Mitigation Measure 3.11-1 in Section 3.11, "Hazards and Hazardous Materials," and shall be applied to this impact.	LTS

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Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
	habitats, the aquatic food web, and fish populations, including special-status species, within the study area and in areas downstream of project mining and enhancement activities.			
3.5-1	Mining activities during project implementation would result in the loss of as-yet unknown cultural resources, including human remains.	PS	3.5-1a **Reduce Potential Impacts on Cultural Resources Through Pre-operation Worker Education, and Archaeological Field Surveys, and Cease Work If Resources Are Encountered.** During the pre-mining worker training, machine operators and their supervisors shall be alerted to the possibility of finding buried cultural resources. Mining bars and access areas not examined by the archaeologist on the May 7, 2007 field visit (Bars S-14, SD-2, and SD-1, and all access roads leading to the bars) shall be surveyed for cultural resources by a qualified professional archaeologist before the commencement of any ground-disturbing activity. Should any historic-era cultural resources, such as structural features, artifacts, historic debris, or architectural remains be encountered during any mining activities, work shall be suspended within 50 feet of the specific location at which the suspected resources have been uncovered, and PRMD shall be immediately contacted. At that time, Syar shall retain a professional archaeological consultant who shall conduct a field investigation of the specific site and recommend mitigation for the protection or recovery of any cultural resources concluded by the archaeologist to represent significant or potentially significant resources (as defined by CEQA). The lead agency shall ensure that the mitigation is implemented before the resumption of mining activities at the	LTS

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Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			location of the find. This mitigation is consistent with mitigation identified in Section 8.15 of the ARM Plan. In the event that archaeological features such as pottery, arrowheads, midden, or culturally modified soil deposits are discovered at any time during grading, scraping, or excavation within the project, all work shall be halted in the vicinity of the find and PRMD Project Review staff shall be notified and a qualified archaeologist shall be contacted immediately to make an evaluation of the find and report to PRMD. PRMD staff may consult and/or notify the appropriate tribal representative from tribes known to PRMD to have interests in the area. Artifacts associated with prehistoric sites include humanly modified stone, shell, bone, or other cultural materials such as charcoal, ash, and burned rock indicative of food procurement or processing activities. Prehistoric domestic features include hearths, firepits, or house floor depressions, whereas typical mortuary features are represented by human skeletal remains. When contacted, a member of PRMD Project Review staff and the archaeologist shall visit the site to determine the extent of the resources and to develop and coordinate proper protection/mitigation measures required for the discovery. PRMD may refer the mitigation/protection plan to designated tribal representatives for review and comment. No work shall commence until a protection/mitigation plan is reviewed and approved by PRMD Project Review staff. Mitigation measures may include avoidance, removal, preservation, and/or recordation in accordance with California law. Archaeological evaluation and mitigation shall be at the applicant's sole expense. Native American contact actions such as those outlined in Mitigation Measure 8.15-1 of the ARM Plan PEIR shall be	

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Table 2-1 Impact and Mitigation Summary				
Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			modified to contact PRMD or currently appropriate groups or individuals at the time cultural resource discoveries are made. 3.5-1b **Stop Potentially Damaging Work if Human Remains Are Uncovered During Mining Activities.** During the pre-mining and enhancement activity worker training, machine operators and their supervisors shall be alerted to the possibility of finding buried human remains. In addition, in accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, Syar shall immediately halt potentially damaging excavation in the area of the burial and notify the Sonoma County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code, Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code, Section 7050[c]). Following the coroner's findings, the property owner, Syar, an archaeologist, and the NAHC-designated Most Likely Descendant (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code. Upon the discovery of Native American remains, Syar shall ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is	

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. Public Resources Code Section 5097.9 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. The following is a list of site protection measures that Syar shall employ to the extent possible: (1) Record the site with the NAHC or the appropriate Information Center. (2) Submit a document to the county in which the property is located. Syar or its authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify an MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. Syar or its authorized representative may also re-inter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to Syar. Syar shall be required to implement any mitigation deemed necessary for the protection of the burial remains. Mining activities in the vicinity of the burials shall not resume until the mitigation is completed.	

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Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
3.5-2	Mining activities during project implementation would not result in the loss of as-yet-unknown paleontological resources.	LTS	None.	LTS
3.6-1	The project would substantially increase traffic in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or congestion at intersections).	PS	**3.6-1** **Restrict Peak Hour Traffic**. Syar shall prohibit project trucks from traveling through the Hwy 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway during the AM peak from 7:00-9:00 AM in accordance with Table 3.6-8. Syar shall monitor and document compliance with this measure, and submit monthly reports during the mining season to PRMD demonstrating compliance. Alternatively, in 2015 or thereafter, Syar may submit to PRMD a traffic study with updated traffic counts at the southbound off-ramp of Hwy 101 and Healdsburg Avenue/Old Redwood Highway. If the study finds that traffic has not grown as quickly as predicted above, and that the intersection has and will operate at LOS D or better during the am peak of 7:00-9:00 AM with more Syar trucks than authorized above, then Syar shall comply with all limits identified in the traffic study to maintain LOS D or better. At no time may Syar exceed 22 truck trips per hour (20 gravel trucks and 2 miscellaneous vehicles).	LTS
3.6-2	The project would not exceed the Roadway LOS standard for designated roads or highways.	LTS	None.	LTS

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Impact and Mitigation Summary

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3.6-3	The project would substantially increase hazards due to a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	PS	**3.6-3a Develop a Traffic Control Plan**. Syar shall retain a professional engineer to develop a traffic control plan for each haul route. The plan at minimum shall include the provision of warning signs and other informational devices to alert other drivers of the presence of trucks entering the major roadways; plans for any usage of traffic lane changes; and locations for any required personnel such as flagmen or personal directing traffic. **3.6-3b Educate Truck Drivers.** As per ARM Plan standards, Syar shall develop a truck driver education program that includes posting details on haul routes and informing drivers of procedures established to reduce public conflicts. Syar shall monitor driver compliance and respond to any complaints about gravel trucks operations. **3.6-3c Improve Curve on Lytton Station Road.** Prior to use of Haul Route 2, Syar shall purchase required right of way and design and construct a widening improvement of Lytton Station Road sufficient to meet applicable Caltrans and AASHTO standards and keep project haul trucks from crossing the center line. The Sonoma County Department of Transportation and Public Works has developed a preliminary concept for lane widening that would expand the paved area of the interior south east quadrant of the curve by approximately 10 feet at the apex. This preliminary concept appears to be the most efficient and cost-effective means of meeting this requirement, although widening to the outside of the curve could also meet this requirement. If right of way is required for the improvements and Syar is unable to acquire the necessary right-of-way to construct the improvements, the implementation of Mitigation Measure 3.6-3c may not be feasible. If the identified improvement in Mitigation	LTS/SU

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Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			Measure 3.6-3c is infeasible, the roadway impact would be significant and unavoidable. 3.6-3d **Trim Vegetation to Increase Stopping Sight Distances.** Prior to using Geyserville Avenue as a haul route, Syar shall ensure that shrubs and other vegetation are trimmed in the County right of way to provide more than 300 feet of stopping sight distance along: • Geyserville Avenue southeast of Hamilton Lane; and • Geyserville Avenue north of Independence Lane.	
3.6-4	The project would increase wear and tear of existing private and public roadways used as haul routes for the project.	PS	3.6-4a **Enter into a Roadway Maintenance Agreement with Sonoma County.** Prior to first mining season, the project applicant shall enter into a Roadway Maintenance Agreement with Sonoma County providing its proportionate share of the responsibility to maintain the proposed haul roads. 3.6-4b **Implement Roadway Preparation Work.** Prior to the use of a Haul Route that utilizes one of the following roads, Syar shall implement roadway preparation work and construct pavement improvements, as described below, prior to the use of the relevant road • Bill Ferguson Road shall receive a new chip seal. • Hassett Lane and Lytton Station Road shall receive a new asphalt overlay. • Healdsburg Avenue shall receive a new chip seal on the portion adjacent to Lytton Station Road.	LTS

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Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			• Banti Lane shall receive a new chip seal. • Prior to proposed roadwork on Lytton Station Road, Hassett Lane and, Healdsburg Avenue, Syar shall perform excavation and pavement repair at locations on the haul route portions of those roads specified by the County Department of Transportation and Public Works to address road base failure. 3.6-4c **Document road conditions and repair roads.** Syar shall document road conditions prior to and after the mining season and repair any damage caused by Syar each year.	
3.6-5	The project could result in damage to existing rail crossings, or result in conflicts between trucks and future rail traffic.	PS	3.6-5 **Improve Railroad Crossings.** Syar shall improve railroad track crossings at Lytton Springs Road (Route 2) and the private crossings on Routes 3, 4, 5, 6, 7, and 8 to meet all applicable safety standards as required by the CPUC and NCRA. For Routes 3, 4, 5, 6, 7, and 8, Syar shall obtain an encroachment permit and enter into a lease agreement with NRCA for installation of improvements. This encroachment permit would obligate Syar for ongoing maintenance of the railroad crossings. For Lytton Springs Road, Syar shall coordinate with the County, CPUC, and NCRA to repair the pavement.	LTS
3.6-6	Mining of certain bars would add truck traffic to Geyserville Avenue, which is designated as a proposed bikeway, and is currently used by bicyclists. Portions of Geyserville Avenue do not	PS	3.6-6a **Widen All Portions of Geyserville Avenue Used as a Haul Route for the Project**. Where necessary, widen the portions of Geyserville Avenue used as a Haul Route for the project. Syar shall widen all portions of Geyserville Avenue used as a haul route to five feet of paved shoulder. Syar shall provide a minimum of 3 feet of paved shoulder in areas with legal, physical and/or environmental constraints (e.g., lack of right of	LTS

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	Impacts	Significance Before Mitigation	Mitigation	Significance After Mitigation
	meet current County roadway design standards and the addition of truck traffic could cause potential conflicts between project traffic and bicyclists and pedestrians.		way, creek crossings, slopes, and trees). 3.6-6b **Educate Truck Drivers.** Syar shall provide information on proposed bike routes in any driver education or training associated with Mitigation Measure 3.6-3b.	
3.6-7	Implementation of Mitigation Measures 3.6-3c, 3.6-3d, and 3.6-7a, could potentially result in secondary impacts in terms of loss of biological resources from vegetation pruning and/or tree removal.	PS	The mitigation measures in Section 3.3, "Vegetation and Wildlife", including measures 3.3-4, 3.3-6, 3.3-7, and 3.3-10b shall apply equally to the implementation of traffic mitigation measures.	LTS
3.7-1	The project would generate long-term operational (regional) emissions of criteria air pollutants and precursors. The generation of PM_{10} would be significant but other criteria pollutant and precursors would be less than significant.	PS	3.7-1 Syar shall implement the following feasible control measures recommended by BAAQMD to limit emissions of PM_{10} for all project phases (NSCAPCD defers to BAAQMD for recommended mitigation measures): ▪ Water all active mining areas and haul routes at least twice daily and more often during windy periods (i.e., 10 mph). Active areas adjacent (i.e., property boundaries within 500 feet) to residences shall be kept damp at all times. ▪ Suspend excavation and grading activity when instantaneous wind gusts exceed 25 mph. ▪ Cover all hauling trucks or maintain at least two feet of freeboard. ▪ Limit all vehicle speeds on unpaved roads to 15 mph. ▪ Minimize idling times either by shutting equipment off when	SU for PM_{10} / LTS for all other criteria pollutants

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Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			not in use or reducing the maximum idling time to 5 minutes. ▪ Apply water at least twice daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and staging areas. ▪ Sweep all paved access roads, parking areas, staging areas and streets daily wherever visible soil material is deposited or tracked. All sweeping will be performed with water sweepers. ▪ Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel. ▪ Enclose, cover, water twice daily, hydroseed, or apply (nontoxic) soil binders to exposed stockpiles. ▪ Where and when feasible, wash off the tires or tracks of all trucks and equipment leaving the site. ▪ Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints.	
3.7-2	The project would generate long-term operational (local) mobile-source emissions of carbon monoxide.	LTS	None.	LTS
3.7-3	The project would result in the exposure of sensitive receptors to project-generated operation-related emissions of toxic air	LTS	None.	LTS

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Impacts		**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
	contaminants, including acrolein.			
3.7-4	Exposure of sensitive receptors to odor emissions.	LTS	None.	LTS
3.7-5	The project would result in a cumulative net increase in long-term greenhouse gas emissions.		3.7-5 Syar shall implement the following measures to reduce CO_2e emissions: • Ensure that all heavy duty equipment is properly tuned and maintained before and during on-site operation. • Use low-sulfur fuel for on-site heavy duty equipment. • When replacing or upgrading equipment, purchase the most economically viable alternative fueled or lower polluting machines. • Turn off diesel equipment standing idle for more than 5 minutes. • Install temporary electrical service whenever possible to avoid need for independently powered equipment (e.g., compressors). • Monitor the efforts of ARB, CEC, and any other State agency charged with reducing California's contribution to global climate change. Implement all applicable control measures adopted by any state agency through promulgated regulations. • Prior to commencing operations, submit a Greenhouse Gas Reduction Plan incorporating the above measures and any other reasonably feasible measures to reduce greenhouse gas emissions by 25% consistent with County General Plan policies.	

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3.8-1	The project would result in a substantial impact on scenic landscape units or scenic corridors.	PS	None.	SU
3.8-2	The project would not result in a substantial impact on a scenic vista.	PS	None.	LTS
3.9-1	Project operations would expose sensitive receptors to noise from equipment used on-site.	PS	3.9-1 **Implement Noise Abatement Measures for On-Site Equipment Use.** Syar shall implement noise abatement measures: ▪ Operation of heavy-duty equipment at Bars SD-2, S-7, and S-8 through S-10 shall be limited to the daytime hours, starting at 7:00 a.m. ▪ All heavy equipment shall be equipped with noise control devices (e.g., mufflers) in accordance with manufacturers' specifications. ▪ All heavy equipment shall be inspected periodically to ensure proper maintenance and presence of noise control devices (e.g., lubrication, non-leaking mufflers, and shrouding). ▪ Temporary noise blankets shall be used to shield the noise-sensitive receptors adjacent to Bars S-9 (Receptors 4-10) and S-10 (Receptors 1-3) if the above measures do not adequately reduce the operational noise levels to within acceptable nontransportation-noise-level performance standards shown in Table 3.9-4, unless the owner(s) and occupant(s) of the sensitive receptors object to the use of	SU

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Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			temporary blankets to shield their residences from noise. Noise blankets shall be placed in the direct line of sight from the bar to the receptor. Height and length of the noise blankets shall depend upon the size and orientation of the operational portion of the bar in relation to the sensitive receptor, and the equipment to be shielded. The blankets shall generally be no higher than 12 feet, nor longer than 300 feet. Noise blankets shall be removed as soon as the mining of the bar is complete.	
3.9-2	Project operations would expose sensitive receptors to vibration.	LTS	None.	LTS
3.9-3	Project haul trucks would expose existing sensitive receptors to traffic noise along public roadway segments.	PS	3.9-3a **Implement Noise Abatement Measures for Public Roadways.** Syar shall meet the relevant exterior noise standard at each potentially impacted residence. To meet the standard, Syar shall implement noise abatement measures, including but not limited to the following measures, on public roadways in the project vicinity: • All heavy trucks shall be equipped with noise control devices (e.g., mufflers) in accordance with manufacturers' specifications. • All heavy trucks shall be inspected periodically to ensure proper maintenance and presence of noise control devices (e.g., lubrication, non-leaking mufflers, and shrouding). • All hauling shall be limited to daytime hours, starting at 7:00 a.m.	LTS/SU

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	Impacts	**Significance Before Mitigation**	**Mitigation**	**Significance After Mitigation**
			• Compression release engine air brakes ("jake brakes") shall not be used while operating haul trucks in residential areas. • Trucks shall reduce speeds to 5 mph below posted speed limit. • Syar shall secure all loose chains and other mechanical items on trucks that may otherwise create unnecessary noise. 3.9-3b **Implement a Detailed Interior Noise Study at Receptor I**. Prior to the use of Haul Route 5, the operator shall seek the consent of the owner(s) and/or occupant(s) of the residence at Receptor I and conduct a detailed interior noise study of the residence. The façade of the residence shall be tested for the amount of exterior-to-interior noise reduction provided by the existing residential façade to ensure that the assumption of a 15-dB reduction with windows and doors closed is accurate. If the detailed interior-noise survey concludes that noise at Receptor I would exceed the interior-noise-level standard of 45 dB Ldn, mitigation shall be provided through installation of noise insulation (window package upgrades that increase the sound transmission class per window by 10 dBA). The project applicant shall offer to compensate the property owner(s) for window upgrades for habitable rooms facing Geyserville Avenue. The property owner(s) shall be responsible for acquiring competitive bids from three (3) qualified contractors to purchase and install the windows. The applicant shall compensate the resident for the cost of the lowest bid after installation of the windows, but shall not be held liable for additional costs that may be incurred during window	

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Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			replacement (dry rot, termite damage, or repairs required to bring the window installation up to code). This measure shall not apply if Receptor I is not occupied for residential use during the mining season in which Haul Route 5 is utilized.	
3.9-4	Project haul trucks along private roads would expose existing sensitive receptors to noise.	PS	3.9-4 Implement Noise Abatement Measures for Private Roadways. Syar shall meet the relevant exterior noise standards at Receptors L and M by either: • Precluding use of Haul Route 3; • Implementing temporary noise barriers as close to Receptors L and M as possible to break the line of sight between haul trucks and the receptors, and reduce noise levels up to 10 dBA and into conformance with County noise standards, unless the owner(s) and occupant(s) of Receptors L and M object to the use of temporary barriers to shield their residences. Temporary barriers shall meet the following requirements: (1) The materials used for temporary barriers shall be sufficient to last through the duration of the mining season and shall be in good condition. (2) The barriers shall be constructed of three-quarter-inch Medium Density Overlay (MDO) plywood sheeting, or other acceptable material having a surface weight of 2 pounds per square foot or greater, and a demonstrated Sound Transmission Class rating of 25 or greater as defined by American Society for Testing and Materials	LTS/SU

Note: LTS = Less Than Significant Impact SU = Significant Unavoidable Adverse Impact
PS = Potentially Significant Impact B = Beneficial

Table 2-1 Impact and Mitigation Summary				
Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			Test Method E90. (3) The MDO barriers shall be lined on one side (noise source side) with glass fiber, mineral wood, or other similar noise-absorbing material at least 2 inches thick with a noise reduction coefficient rating of NRC-0.85 or greater, based on certified sound absorption coefficient data taken according to American Society for Testing and Materials (ASTM) Test Method C423. (4) When barrier units are joined together, the mating surfaces shall be flush with each other. Gaps between barrier units, and between the bottom edge of barrier panels and the ground, shall be closed with material that will completely close the gaps and be dense enough to fully attenuate noise.	
3.10-1	The project would increase the demand for water during mining operations.	PS	None.	LTS
3.10-2	The project would not increase wastewater production such that sewer system improvements would be needed.	PS	None.	LTS
3.10-3	The project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires.	PS	None.	LTS

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Table 2-1 Impact and Mitigation Summary					
Impacts		**Significance Before Mitigation**		**Mitigation**	**Significance After Mitigation**
3.11-1	Transport, storage, and use of hazardous materials during mining or river enhancement plan activities (i.e., petroleum products) could be spilled or otherwise released through improper handling or storage, or through unforeseen and accidental conditions.	PS	3.11-1	Update the Spill Prevention Fueling and Lubrication (SPFL) Plan. Before initiation of mining activities, Syar shall update its SPFL plan in conformance with all federal, state, and local requirements and the ARM Plan. The SPFL plan shall be reviewed and approved by the Sonoma County Department of Emergency Services. The SPFL plan shall describe in detail the safety procedures followed by Syar (e.g., weekly visual inspections of any tanks and storage containers, spill prevention procedures, employee training regarding the use of equipment, spill prevention and response training, risk management), disposition of spill response equipment, as well as the procedure for response and notification in case a spill occurs. Additionally, the SPFL plan shall address the following issues: ▪ Vehicle and mining machinery equipment fueling and maintenance procedures and practices shall be designed to minimize or eliminate the discharge of hazardous material spills and leaks to the ground or to watercourses. These procedures shall be applied on all sites where vehicle and equipment fueling and maintenance take place. ▪ On-site vehicle and equipment and machinery fueling and maintenance shall only be used where it is impractical to send vehicles and equipment off-site for fueling and maintenance. Any stationary equipment on-site shall be placed on a bermed containment pad covered by a minimum 10-millimeter liner that is impervious to petroleum products. ▪ Drip pans or absorbent pads shall be used during vehicle and equipment fueling and maintenance, unless the fueling or maintenance is performed over an impermeable surface	LTS

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Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			in a dedicated fueling area. ▪ Dedicated fueling and maintenance areas shall be protected from storm water run-on and runoff, and shall be located at least 15 meters (50 feet) from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas. ▪ Fueling nozzles used in vehicle and equipment fueling shall be equipped with automatic shut-off capabilities to prevent the overflowing of fuel tanks and to control drips. Equipment fueling operations shall not be left unattended. ▪ Where required by NSCAPCD, vapor recovery nozzles shall be used to help control drips and air pollution. Nozzles shall be secured upright when not in use. ▪ Fuel tanks shall not be topped off. Allowances shall be made to account for fuel expansion, particularly during hot weather. Fuel tanks shall be filled to a maximum of 85% full. ▪ Vehicles, machinery, and equipment shall be inspected each day before use for engine oil, hydraulic oil, and coolant system leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the study area. Hoses and hydraulic lines shall be inspected for abrasions and cracking. If a hose or hydraulic line is damaged or in obvious need of repair, it shall be replaced before the equipment starts work for the day. Hydraulic system pressure relief valves shall be tested periodically to ensure the equipment hydraulic system does not overpressurize and cause hydraulic hose or fitting failure.	

Table 2-1
Impact and Mitigation Summary

Note: LTS = Less Than Significant Impact SU = Significant Unavoidable Adverse Impact
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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
			▪ Absorbent spill cleanup materials and spill kits shall be available in fueling and maintenance areas and on fueling trucks and shall be disposed of properly after use. Absorbent spill cleanup materials shall be used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be contained, removed promptly, and disposed of properly. ▪ Mobile fueling of equipment shall occur at designated fueling areas on the terraces away from the high banks of the river channel. ▪ Fueling and maintenance areas shall be protected with berms and/or dikes, where practical, to prevent run-on and runoff and to contain spills. ▪ Fueling areas and storage tanks shall be inspected regularly. ▪ An ample supply of spill cleanup material shall be kept on the site. ▪ Syar shall immediately clean up spills and properly dispose of contaminated soil and cleanup materials. Syar shall implement the measures in the plan in the event of an accidental release of hazardous materials as required in the Sonoma County ARM Plan. A copy of the final documentation of the cleanup/spill incident report following an accidental release of hazardous materials shall be submitted to the Sonoma County Department of Emergency Services to demonstrate the completion of the mitigation.	

Note: LTS = Less Than Significant Impact SU = Significant Unavoidable Adverse Impact
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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
3.12-1	The project would not generate demand for energy services that would result in the need for new or physically altered facilities or exceed the ability of the service provider to provide without substantially decreasing its ability to serve the existing population.	PS	None.	LTS
3.13-1	The project would not result in the conversion of farmland, nor would it conflict with existing zoning for agricultural use. Mining activities would occur on Williamson Act–contracted parcels, but would not conflict with the Williamson Act contracts.	LTS	None.	LTS
3.13-2	The project appears to be consistent with applicable land use plans, except as it relates to noise generated	PS	All of the project's potential environmental effects are addressed in their respective sections of this EIR. Mitigation measures identified in this EIR would minimize and mitigate adverse environmental effects of the project to the extent feasible.	LTS

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Table 2-1
Impact and Mitigation Summary

Impacts		Significance Before Mitigation	Mitigation	Significance After Mitigation
	from on site mining equipment and mining-related haul trucks. In these areas, the project appears to conflict with SMARO and ARM Plan standards.			
3.14-1	The project would not substantially reduce recreational opportunities or substantially degrade recreational experiences.	LTS	None.	LTS
3.14-2	Implementation of the REP will expand riparian and wetland areas, improve aquatic and terrestrial habitats that would benefit recreational users.	B	None.	B
3.14-3	Mining and REP streambank enhancements, including bioengineered bank stabilization measures and placement of large woody debris, could have a negative effect on recreation if they create an attractive nuisance, boating hazards or temporarily block the navigable channel.	PS	3.14-1 Prior to issuance of grading permits, Syar shall submit an engineering analysis demonstrating that any proposed bank stabilization or enhancement features are anchored, meet applicable construction standards, and are designed to withstand the hydrologic force of the river. 3.14-2 Syar shall install fencing, post warning signs, provide site patrol, and take other actions necessary to ensure the security of the active mining site and associated work equipment storage areas and control private access to those areas.	LTS
4-1	The project's contribution to cumulative recreation	PS	4-1 Syar shall contribute a fair share towards the County's Russian River Gravel Mitigation Fund Recreation Enhancement	LTS

Note: LTS = Less Than Significant Impact
PS = Potentially Significant Impact
SU = Significant Unavoidable Adverse Impact
B = Beneficial

Table 2-1 Impact and Mitigation Summary					
Impacts		**Significance Before Mitigation**		**Mitigation**	**Significance After Mitigation**
	impacts would be considerable if the project does not participate in the Recreation Enhancement Program as required by the ARM Plan and mining ordinance.			Program or offer to dedicate to the County an access easement of equal value in-lieu of the fair share.	

Note: LTS = Less Than Significant Impact SU = Significant Unavoidable Adverse Impact
PS = Potentially Significant Impact B = Beneficial

3.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Chapter 3 presents the environmental setting, impacts, and mitigation measures for the Syar Alexander Valley Instream Mining Project. Topics addressed in these sections are based primarily on the checklist in Appendix G of the State CEQA Guidelines and consistent with the aggregate resource management plan (ARM Plan) and Sonoma County Surface Mining and Reclamation Ordinance (SMARO). The environmental resource topics for each of these categories are presented below.

- 3.1 Geology, Minerals, and Soils
- 3.2 Hydrology and Water Quality
- 3.3 Vegetation and Wildlife
- 3.4 Fisheries
- 3.5 Cultural Resources
- 3.6 Traffic and Circulation
- 3.7 Air Quality
- 3.8 Aesthetics
- 3.9 Noise
- 3.10 Public Services and Utilities
- 3.11 Hazards and Hazardous Materials
- 3.12 Energy
- 3.13 Land Use and Agriculture
- 3.14 Recreation

Each of the above sections is divided into three parts: Setting, Regulatory Framework, and Potential Impacts and Mitigation Measures. These are described in further detail below. Cumulative effects for each of the environmental topics above are evaluated in Chapter 4.

Setting. The setting includes the regional setting and the local setting. The regional setting presents the existing conditions within the study area vicinity and/or greater Sonoma County for the environmental topic. The local setting provides the existing conditions specific to the study area for the environmental topic.

Regulatory Framework. Where the Project study area falls within the jurisdiction of federal, state, and local regulatory agencies, the project proponent would be subject to the laws, regulations, and policies of those agencies. These regulations are intended to guide development and/or to reduce adverse effects on sensitive resources, or offer general guidance on the protection of such resources. The regulatory framework sections summarize the laws, rules, and regulations that may apply to the project for each issue area. These rules may also set the standards (significance criteria or thresholds of significance, as described below) by which potential project impacts are evaluated.

Potential Impacts and Mitigation Measures. The "Potential Impacts and Mitigation Measures" section presents the significance criteria (also referred to as thresholds of significance under CEQA) against which potential impacts are evaluated, and a discussion of potential impacts that would result from implementation of the proposed project. The significance criteria are based primarily on Appendix G of the State CEQA Guidelines. As defined by Section 15064.7(a) of the State CEQA Guidelines, thresholds of significance are an identifiable quantitative, qualitative, or performance standard for a particular environmental effect. Additional criteria have been provided by the County of Sonoma for some issue areas.

The significance criteria presented in this EIR provide the basis for determining whether the project would have significant environmental effects, and as such are presented before the evaluation of potential impacts in Sections 3.1 through 3.14.

In determining the significance of impacts, many CEQA documents generally categorize impacts as “significant” or “less than significant” based on stated significance criteria. CEQA defines significance as a substantial or potentially substantial adverse change to the environment (Section 15382). The following terms are used in this EIR to characterize project impacts:

- *Significant:* Adverse environmental effects would occur (impacts would exceed the significance criterion or threshold defined for each environmental issue), and no mitigation measures are available to reduce impacts to levels below the significance criterion.
- *Less than Significant:* Environmental effects would not exceed the significance criterion.
- *Less than Significant with Mitigation:* Adverse environmental effects would occur but mitigation measures would be implemented to reduce adverse effects to less-than-significant levels.
- *No Impact:* No adverse environmental effects would occur.

As described in Chapter 1, “Introduction and Project Description”, the ARM Plan PEIR addressed the environmental setting and impacts of mining under the ARM Plan, and imposed appropriate mitigation measures. This EIR provides a full and independent analysis of the proposed project, including its environmental setting, environmental impacts (including those related to the new proposed mining techniques and adaptive management strategy), and, applicable mitigation measures.

In addition, all mining-related activities (e.g., vegetation removal, installation of access road and temporary bridge[s], skimming, and river enhancement plan [REP] activities) are evaluated as part of overall operation, rather than separately as construction and operation. As such, all physical changes resulting from the proposed project are evaluated in terms of operational effects in this EIR.

As described in Chapter 1, “Introduction and Project Description,” “[a]n EIR must include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the notice of preparation (NOP) is published, or if no NOP is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant.”

All on-site impacts resulting from gravel mining would be considered new impacts because they would occur in an area that is at present undisturbed by mining, even though large portions of the study area have been mined in the past. Project impacts are evaluated against a baseline that consists of the current undisturbed site.

CEQA addresses the potential for mitigation to reduce environmental impacts. CEQA states that "an EIR shall describe feasible measures which could minimize significant adverse impacts" (State CEQA Guidelines, Section 15126.4[a][1]). Mitigation measures are intended to do one of the following:

- avoid the impact altogether by not taking a certain action or parts of an action;
- minimize impacts by limiting the degree or magnitude of the action and its implementation;
- rectify the impact by repairing, rehabilitating, or restoring the affected environment; or
- reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action.

Significant impacts that cannot be mitigated to less-than-significant levels are considered unavoidable.

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3.1 GEOLOGY, MINERALS, AND SOILS

The following analysis has been prepared based on:

- review of the aggregate resource management plan (ARM Plan) from 1994,
- review of *Geomorphic Analysis and Mining Plan for Lower Alexander Valley between Gill Creek and the Jimtown Bridge* (Syar 2005a),
- review of *Hydrologic Impacts of Gravel Mining on The Russian River* (Simons, Li & Associates, Inc. 1991), and
- review of the *Alexander Valley Gravel Bar Skimming Plan* submitted by Syar Industries to Sonoma County (Syar 2005b).

A. Setting

REGIONAL SETTING

The Alexander Valley is one of several northwest-trending intramontane basins located within the northern Coast Ranges of California. The geologic and topographic characteristics of the Coast Range Geomorphic Province are a product of the combination of the tectonic processes, geologic materials, and climate of the region.

The regional bedrock geology consists of complexly folded, faulted, sheared, and altered bedrock that is of the Franciscan Complex of Upper Jurassic to Cretaceous age (65–190 million years old). The Franciscan Complex is composed of a variety of rock types. In the project vicinity and surrounding area, the Franciscan Complex consists of packages or blocks of sheared and unsheared shale and more coherent greywacke sandstone with minor amounts of greenstone, conglomerate, serpentinite, chert, and limestone. Folds are also common within the region's Franciscan Complex.

The geologic province formed at the boundary between the North American and Pacific Crustal plates and from the earlier subduction of the Farallon Tectonic Plate. The contact between these two plates is the San Andreas Fault Zone and subsidiary faults of the San Andreas Fault System. Subsequent compression, uplift, and faulting occurred during the Miocene and Pliocene epochs of the Tertiary Period (between 5 and 15 million years ago). The current tectonic setting is related to the movement along the northwest-southeast trending faults such as the San Andreas and Rodgers Creek–Healdsburg Faults, with movement of the Pacific plate to the north and west relative to the North American Plate.

LOCAL SETTING

The Russian River watershed above the Alexander Valley is uplifting because of compression along the San Andreas Fault Zone and the proximity and geological recent passage of the Mendocino Triple Junction[1]. Because of tectonic uplift and consequent downcutting by river systems, the watershed consists of mostly steep terrain. The terrain is underlain by generally weak rocks and is subject to long intense rainstorms during the winter months. This combination of geologic and climatic factors, combined with land use influences such as timber harvesting,

[1] The Mendocino triple junction is a place where three plates, the Gorda, the North American, and the Pacific, are in contact.

causes high rates of erosion on hill slopes. As a result, the watershed delivers large volumes of sediment to the river network.

Gravels located within the instream alluvial deposits and adjacent terrace deposits of the Russian River have been providing most high-quality construction aggregate produced within the county for many years. The ultimate sources of these aggregate gravels are bedrock formations whose weathering and erosion provides the raw materials from which the gravels are formed. The Franciscan Complex is the principal bedrock formation from which the gravels are derived. The study area consists of alluvial deposits on instream gravel bars of the Russian River. The deposits include sand and gravel originating from weathering and erosion of basaltic rocks and a variety of metamorphosed sandstone and shale. As the bars are repeatedly inundated by the river with deposition of new sediments, there is little or no topsoil on the gravel bars, although dry depressions on or behind bars or areas that are not inundated annually may develop thin topsoil.

The study area is located in an area shown on U.S. Geological Survey (USGS) Map I-909 titled “Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future.” The study area is described as gravel, sand and mud deposits of marine and nonmarine origins. This is corroborated by the California Division of Mines and Geology’s Data Map No. 2 titled “Geologic Map of California” (Jennings 1977). Jennings describes the material as Quaternary alluvial, lake, playa, and terrace deposits, unconsolidated and semiconsolidated, mostly nonmarine, and deposited within the last 11,000 years. It is identified as part of Aggregate Resource Sector B-2, shown on plate 3.47 of the California Division of Mines and Geology’s Surface Mining and Reclamation Act (SMARA) Report 146, 1982.

Seismicity and Ground Shaking

The study area is located in a seismically active region of California. The Rodgers Creek–Healdsburg Fault, mapped about 1 mile east of the study area, is the nearest active fault. The active San Andreas Fault lies approximately 30 miles west of the study area. These are northwest-southwest trending faults considered probable extensions of active fault traces paralleling San Francisco Bay. These active faults are not known to cross the study area and thus no fault rupture hazard is present in the study area.

The Modified Mercalli Intensity (MMI) Scale is commonly used to measure earthquake effects caused by ground shaking. Table 3.1-1 defines levels IV, V, VI, and VII of the MMI scale.

Anticipated earthquake shaking intensity maps based on the MMI have been developed for the San Francisco Bay region, including the study area. Weak to strong (MMI IV to VII) ground shaking in the study area could result from a large-magnitude earthquake on the Rodgers Creek–Healdsburg Fault or the San Andreas Fault.

The estimated maximum probable earthquake magnitude for the San Andreas Fault is 8.5, and for the Rodgers Creek–Healdsburg Fault, 7.0 (Sonoma County 1989). Because of the proximity of active faults in the region, the study area would be subject to high ground shaking intensities in the event of an earthquake centered on the San Andreas or Healdsburg–Rodgers Creek Faults. The severity of ground shaking varies considerably over the impacted region depending on the size of the earthquake, the distance from the epicenter of the earthquake, the nature of the soil at the study area, and the nature of the geologic material between the study area and the fault. Ground shaking can cause damage to inadequately designed or improperly constructed structures and foundations

Table 3-1
Ground Shaking Levels of Concern on the Modified Mercalli Intensity Scale

Ground Shaking Level	Definition
IV: No description of shaking severity	No description of shaking severity. Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV, wooden walls and frame creak.
V: Light	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI: Moderate	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken (visibly, or heard to rustle).
VII: Strong	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
Source: ABAG 1978	

Liquefaction

Liquefaction is a phenomenon whereby unconsolidated and/or near-saturated soils lose cohesion and are converted to a fluid state because of severe vibratory motion generally associated with earthquake ground shaking. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary fluid like behavior of the soil. Soil liquefaction causes ground failure that can damage roads, underground infrastructure, and buildings with shallow foundations. The depth to groundwater influences the potential for liquefaction; the shallower the groundwater, the higher the potential for liquefaction.

Soils

Soils are surface materials derived from the geology that have been modified or acted upon by physical, chemical, or biological agents so that they will support plant life. Characteristics such as depth, permeability, ability to hold water, and fertility vary widely from place to place. Within Sonoma County there are 259 soil types that are classified into 15 major soil associations. Soil associations are divided into six broad groups, and classified A–F based upon color and texture. These groups illustrate the general pattern of soil occurrence in Sonoma County: associations in Groups A–C include soils found primarily in basins, floodplains, terraces, and alluvial fans where instream and terrace production is most likely to occur, while the association in Groups D–F include soils found primarily in high terraces, foothill, upland, and mountain areas generally associated with quarries.

Soils in the vicinity of the proposed mining sites fall under the Yolo-Cortina-Pleasanton Association within Soils Group C. These are well drained to excessively drained, nearly level to moderately sloping, very gravelly sandy loams to clay loams located on floodplains, alluvial fans, and low terraces. This association is found along the Russian River north of Windsor, in the Dry Creek Valley, along the Alexander Valley, north of Cloverdale, and along the Gualala River and is the area where most terrace and instream production takes place.

Gravel bars are "lithic" soils, which mean they do not have a defined profile of horizon development associated with weathering. There is little or no topsoil on the gravel bars, depending on the frequency of inundation; however, the floodplain areas typically contain the same soil profile as the adjoining terraces near the top of the slope, and a thin layer made up of terrace soils and silt trapped by streamside vegetation at the bottom of the slopes.

Landslides

A landslide is a movement of a mass of soil down a slope when the soil loses strength and can no longer support the weight of overlying soil or rocks. Human actions can influence the activity of existing slides or create new slope instability. For example, improperly designed, constructed, and maintained cut slopes and excavation can fail, resulting in physical damage and possibly risk to life. Inappropriate diversion of surface runoff or inadequate subsurface drainage can result in the saturation or weakening of earth materials.

Damaging landslide movements have occurred in Sonoma County. The most widespread and damaging landslides usually occur during years of higher than normal precipitation, particularly in response to intense rainfall. The study area is flat, so substantial landslide hazards do not exist. Collapse of steep riverbanks related to lurching or landslide could occur during an earthquake, but is not expected to pose a substantial hazard.

Expansive Soils

Expansive soil is a fine-grained clay that occurs naturally and is generally found in areas that historically were floodplains or lake areas, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Expansion takes place as water is initially introduced into the soil (by rainfall or watering). The soil will contract if dried out, often leaving small fissures or cracks. Because gravel and sand dominate on the bars, there are no expansive soils within the study area.

B. Regulatory Framework

STATE REGULATORY ISSUES

Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act required the State Geologist to delineate zones of active faulting in the state and to require studies to be performed for projects located within the delineated Earthquake Fault Zones. The purpose of the act was to prohibit the location of most structures for human occupancy across active fault traces and mitigate the hazard of surface fault rupture. The study area is not located within an Alquist-Priolo Earthquake Fault Zone and no structures are proposed.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (California Geological Survey 2004a) was developed to assist local governments in protecting the public from the hazards of strong seismic ground shaking, liquefaction, landslides, or other ground failure and seismic hazards caused by earthquakes. The act supports a program of mapping areas subject to the secondary effects of earthquake ground shaking, including zones of liquefaction and landslides. Cities and counties require studies to investigate and mitigate the potential seismic hazard zones identified on the maps. To date, mapping efforts have concentrated on the large urban population centers of southern California and the San Francisco Bay Area. No seismic hazard maps have been produced for the study area and vicinity.

The Surface Mining and Reclamation Act of 1975

SMARA provides for reclamation of mined lands and directs the State Geologist to classify land within California according to the presence or likely occurrence of significant mineral deposits (California Geological Survey 2004b). The mineral land classification reports and maps are made available to the appropriate lead agencies, which are required to incorporate the information in their general plans. Since 1975, known and potential mineral deposits have been mapped in about one-third of the state under SMARA. The primary intent of SMARA was to create effective and comprehensive reclamation policies and regulations to reduce the adverse environmental effects and to ensure mined lands are reclaimed to a usable condition. The act also encourages the production and conservation of mineral resources.

LOCAL REGULATORY ISSUES

The Resource Conservation Element of the Sonoma County General Plan addresses soil and mineral resources. The following goals and policies are relevant to the project:

Goal RC-2: Promote and encourage soil conservation and management practice that maintain the productivity of soil resources.

Objective RC-2.1: Ensure that permitted uses are compatible with reducing potential damage due to soil erosion.

Objective RC-2.2: Establish ways to prevent soil erosion and restore areas damaged by erosion.

Policy RC-2a: Design discretionary projects so that structures and roads are not located on slopes of 30 percent or greater. This requirement is not intended to make any existing parcel unbuildable if Health Department and Building Department requirements can be met.

Policy RC-2b: Include erosion control measures for any discretionary project involving construction or grading near waterways or on lands with slopes over 10 percent.

Policy RC-2e: Retain natural vegetation and topography to the extent economically feasible for any discretionary project improvements near waterways or in areas with a high risk of erosion as noted in the Sonoma County Soil Survey.

Policy RC-2f: Prepare and submit to the Board of Supervisors an erosion and sediment control report.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to CEQA Guidelines, exposure of people or structures to major geological hazards is considered a significant adverse impact. The potential geologic, soils, and seismic effects of the proposed project can be considered from two points of view: (1) mining operations impacts; and (2) geologic hazards to people. The basic criterion applied to the analysis of mining operations impacts is whether the process of mining operations would create unstable geologic conditions that would last beyond the short-term mining operation period. The analysis of geological hazards is based on the degree that the study area geology could produce hazards to people from earthquakes, ground shaking, ground movement, fault rupture, or other geologic hazards, features or events.

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving any of the following:
  a. rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  b. strong seismic shaking;
  c. seismic-related ground failure, including liquefaction; or
  d. landslides;
- results in substantial soil erosion or the loss of topsoil;
- be located in a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property;
- have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems, where sewers are not available for the disposal of wastewater;
- directly or indirectly destroy a unique geologic feature;
- result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

No structures are proposed as part of the project; therefore, potential impacts on structures are not discussed further.

PROJECT IMPACTS

Findings in the ARM Plan PEIR

Potential impacts on geology and soils were evaluated in Section 8.1, “Geology,” and 8.2, “Soils,” of the ARM Plan PEIR. The ARM Plan PEIR did not identify any impacts on geology or soils related to instream mining.

Project Impacts

Soil erosion and the loss of topsoil are evaluated in Section 3.2, “Hydrology and Water Quality.” No substantial risks to life or property would occur as a result of the project being located on expansive soils because no expansive soils are located within the study area.

The project would not require construction of a new or expanded on-site wastewater disposal system. Therefore, no impacts related to the use of septic tanks or alternative wastewater disposal systems would occur.

No unique geologic features have been identified within the study area. As such, no direct or indirect impacts on unique geologic features would occur.

As described above, the study area is identified by USGS as containing mineral resources, including gravel, sand, and mud deposits. However, because fluvial processes would naturally replace the mined materials within a relatively short time frame (depending on the frequency of large flood events), the project would not result in the loss of availability of a locally important mineral resource. Potentially significant geologic and soil impacts would be limited to the area of seismic risk, landsliding, and unstable slopes, as described below.

Impact 3.1-1 The project would not expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving seismic events.

Although the seismically active San Andreas and Healdsburg–Rodgers Creek Faults are located near the study area, the study area is not located on mapped fault traces or fault zones designated in the Alquist-Priolo Earthquake Fault Zoning Map. As such, the potential to expose people to potential adverse effects, including the risk of loss, injury, or death involving fault rupture, would be less than significant.

Secondary impacts associated with earthquake events include seismically induced ground shaking, liquefaction, bank failure, and landslides. Because of the location of the study area in proximity to the San Andreas and Healdsburg–Rodgers Creek Faults, the study area would be subject to weak to strong ground shaking (MMI IV to VII). The nature of the sand and gravel deposits in the skimming area present a potential for uncontrolled soil movement and liquefaction during an intensive seismic event. However, because heavy equipment is typically operated on flat ground away from excavated slopes, seismic events would not adversely affect skimming operations or subject workers to significant hazard. Because the study area is generally flat, the potential for landslide hazards would not occur. Therefore, workers at the proposed mining area would not be subject to seismic hazards such as loss, injury, or death. Potential impacts would be less than significant.

Mitigation Measures

None.

Impact 3.1-2 The project would not be located in a geologic unit or soil that is unstable. Mining operations, including grading of access roads and skimming activities, have the potential to result in unstable slopes that would expose people or structures to potential adverse effects, including the risk of loss, injury, or death.

Grading of an access road (within the bank to the gravel bars) and skimming activities could result in unstable side slopes. In addition, the removal of riparian vegetation and clearing of the bars could result in slope stability impacts along the channels and banks of the river. As part of the project, cut slopes along the interior sides of the mined areas (for horseshoe and effective discharge stage height techniques) and for areas of river enhancement plan (REP) activities (alcove and oxbow enhancements) would remain at a 2:1 ratio, while the cut slopes at the upper (upstream) end of the skimmed area would be left at a 10:1 ratio. Syar would maintain a setback of 30 feet or 2.5 times the slope height (whichever is greater) from the outer riverbank (top of bank) to the interior edge of skimming areas. In addition, riparian vegetation would be transplanted to the high banks and head of bars to reinforce those areas along the river.

For optional REP activities such as benching, Syar would establish variable slope ratios between 3:1 and 10:1 along the perimeter of the skimmed area; the skimmed floor would have a downstream gradient for this method matching that of the river and a 0.5% cross slope. At the end of the operating season, stockpiled topsoil would be used to resoil the side slopes. These slopes would be revegetated with transplanted vegetation from other skimmed areas and through colonization of native riparian habitat. The middle and bottom of these slopes would also be staked with straw wattles to help retain the soil and establish vegetation.

Although the proposed buffers and transplant of vegetation would generally increase soil stability, the stability of the access road and skimmed area side slopes would need verification by a certified engineering geologist, geotechnical engineer, or civil engineer to ensure that workers are not exposed to the risk of loss, injury, or death from the sudden collapse of cut slopes. All grading in the County must comply with Section 11 of the Sonoma County Code, which impose requirements to ensure slope stability and address other potential impacts. Standard conditions of approval require that grading permits be applied for and approved by the Permit and Resource Management Department's Engineering Section. Such a verification and final grading of the skimmed floor would reduce potential impacts associated with soil instability to less-than-significant levels.

Mitigation Measures

None.

3.2 GEOMORPHOLOGY, HYDROLOGY AND WATER QUALITY

The following analysis has been prepared based on review of the project description and several studies related to hydrology, hydraulics, water quality, and morphology of the Russian River. Among these studies are the following:

- Sonoma County ARM Plan (Sonoma County 1994).
- Syar Proposed Mining and Reclamation Plan for Sand and Gravel Extraction from Gravel Bars along the Russian River (Syar 2005a).
- Geomorphic Analysis and Mining Plan for the Lower Alexander Valley between Gill Creek and the Jimtown Bridge (Syar 2005b).
- Hydrologic Impacts of Gravel Mining on the Russian River (Simons, Li & Associates, Inc. 1991).
- California Rivers and Streams (Mount 1995).
- Assessment of Channel Morphology and Gravel Extraction in Alexander Valley and Vicinity, Russian River, CA (Northwest Hydraulic Consultants, Inc. May 1996).
- 2004 and 2005 Annual Monitoring Program Results, Russian River, Sonoma County, California (ENTRIX Inc. 2007).
- 2006 and 2007 Annual Monitoring Program Results, Russian River, Sonoma County, California (ENTRIX Inc. 2009).
- 2008 Annual Monitoring Program Results, Russian River, Sonoma County, California (ENTRIX Inc. 2010).
- Hungry Water: Effects of Dams and Gravel Mining on River Channels (Kondolf 1997).
- Meeting Minutes Public Scoping Meeting for the Proposed Syar Instream Mining-Alexander Valley Project (May 11, 2006).
- ENTRIX Inc. Letter to Sonoma County PRMD - Russian River Scientific Review Consultants Recommendations (August 24, 2006).
- Geohydrology and Water Chemistry of Alexander Valley, Sonoma County, U.S Geological Survey- Scientific Investigations Report (USGS 2006).
- Draft Russian River Alexander Valley River Enhancement Plan for Syar Industries Reach (Gill Creek Confluence to Jim Town Bridge) (Syar 2008).
- Freshwater Gravel Mining and Dredging Issues (Kondolf et al. 2002).
- EIR/EIS 1997. Syar Industries Vested Rights Instream Gravel Mining Project in the Middle Reach of the Russian River near Healdsburg.
- NOAA NMFS Sediment Removal Guidelines for the Southwest Region.
- NOAA NMFS Sediment Removal from Freshwater Salmonid Habitat: Guidelines to NOAA Fisheries Staff for the Evaluation of Sediment Removal Actions from California Streams. (NOAA Fisheries 2004).
- NOAA NMFS Biological Opinion for Threatened Salmonids at the DeWitt Sand and Gravel Operations in the Russian River in Alexander Valley.
- Sonoma County Hazard Mitigation Plan (Sonoma County 2006).
- NOAA NMFS Habitat Restoration and Conservation Plan for Anadromous Salmonid Habitat in Selected Tributaries of the Russian River Basin, November 2007.
- Geomorphic and Hydrologic Conditions in the Russian River, California: Historic Trends and Existing Conditions (Phillip Williams & Associates 1993).
- Phillip Williams & Associates 1993. Geomorphic and Hydrologic Conditions in the Russian River, California: Historic Trends and Existing Conditions. Prepared for California State Coastal Conservancy and Mendocino County Water Agency.

- Sonoma County Water Agency (L. Parsons, R. Bekert, S. Brady), 2003. Aggregate Resource Management Plan EIR 2000–2001 Biotic Monitoring Program Report. Prepared for the County of Sonoma, Permit and Resource Management Department.
- Thomas Dunne and L. B. Leopold 1978. Water in Environmental Planning. W.H. Freeman and Company, N.Y.
- US EPA, website (http://www.epa.gov/warsss/sedsource/bankfull.htm). Watershed Assessment of River Stability & Sediment Supply (WARSSS). Prepared by D.L. Rosgen.

A. Setting

The Russian River flows for 110 miles and drains over 1,400 square miles of Mendocino, Sonoma, and Lake Counties. From its headwaters in the North Coast Range, the Russian River flows southerly through a series of valleys and canyons including the Ukiah Valley and the communities of Ukiah and Hopland, then into the Alexander Valley through Cloverdale, Geyserville and out of the Alexander Valley at Jimtown Bridge. Below Jimtown, the river enters a confined bedrock-controlled canyon called Digger Bend from which it emerges into the Middle Reach valley near Healdsburg, which is located along the western edge of the Santa Rosa Valley. The lower river leaves the Middle Reach at the Wohler Bridge, then turns westerly in a confined valley through the communities of Rio Nido, Guerneville and Duncan Mills. It empties into the Pacific Ocean at Jenner about 20 miles west of Santa Rosa.

This project focuses on the lower 6.5 miles of the 20-mile long Alexander Valley, located between the Jimtown Bridge and the confluence with Gill Creek between River Miles (RM) 47.5 and 54 (See Chapter 1, Project Description, Figures 1-1 through 1-4). The project reach was designated as an instream mining area by the Sonoma County Aggregate Resource Management Plan (Sonoma County ARM Plan, 1994).

The watershed surrounding and upstream of the Alexander Valley is comprised of steep mountainous terrain that is uplifting due to compression along the San Andreas Fault Zone and its proximity to the Mendocino Triple Junction tectonic area (Syar 2005b p5). The three valleys of the Russian River, Ukiah Valley, Alexander Valley and the Middle Reach are subsiding "pull apart" basins that were created by differential rates of later slip along fault zones. The terrain surrounding these valleys and the upper watershed areas are underlain by highly fractured geologic materials, predominately including the Franciscan Formation and younger volcanic and alluvial formations. Highly erodible and steep terrain coupled with high precipitation and intense rainfall concentrated in the winter seasons create naturally high rates of sediment production; land use influences such as logging, farming, roads and land development increase local rates of erosion and deliver relatively large volumes of sediment from gullies and landslides on hill slopes into tributaries then into the main stem Russian River.

In Alexander Valley, the Russian River is fed sediment and flow from the upper Russian River watershed and by numerous tributaries from the Mayacamas Mountains flowing in from the east. Of these, the two major tributaries are Big Sulphur Creek at the northern end of the valley, and Mayacama Creek at the southern end of the valley. Other tributaries include Crocker Creek, Gill Creek, Miller Creek, Gird Creek, Sausal Creek, Rancheria Creek, Peterson Creek, and numerous unnamed watercourses. Flood storage and releases at Coyote Dam (drainage area 100 square miles) has minimal influence on peak flows in the Alexander Valley (drainage area ranges between about 600 and 700 square miles).

Climate and Hydrology

The Russian River experiences a Mediterranean climate characterized by dry, warm to hot summers and mild wet winters. Most precipitation occurs as rainfall, with annual rainfall depths ranging from 22 to 80 inches per year occurring mainly in the months of November through March. An average of 42 inches occurs at the project areas (SEC 1996). Rainfall amounts are affected by climatic variability and the occurrence of El Nino events in the Pacific Ocean. El Ninos are characterized by warming of sub-equatorial waters in the Pacific, which increases water uptake into storms and can funnel intense storms into the western US. The winters of 1983, 1986, 1995, 1997/98 and 2006 were El Nino years. In 1995, for example, Healdsburg received 70 inches of rainfall compared to a 42 inch per year average. Intense rainfall is also accentuated by localized orographic uplift on mountain ranges within the watershed.

Flows in the Russian River are fed by winter surface runoff. Base flows are derived from groundwater, springs and seeps, and flow releases from Coyote Dam. Winter temperatures occur below freezing for short periods from November through February, and as a result, there is little snow accumulation at higher elevations and snowmelt contributes little to overall base flow of the river. Flow releases from Coyote Dam in the summer months are withdrawn in Sonoma County for water supply using shallow wells; these augmented summer flows have been used to irrigate the Russian River corridor since the late 1950s which has greatly increased soil moisture and riparian vegetation growth. Prior to the construction of Coyote Dam in 1959 and the interbasin transfer of water from the Eel River to the Russian River through the PG&E Potter Valley Project, the unregulated hydrology of the Russian River often resulted in extended months of no flow. Historic photographs show a barren river channel in some locations (clearing vegetation for land use also contributed to this condition) with shallow groundwater and dense vegetation at the lower ends of the valleys.

The project reach drains a watershed area of approximately 700 square miles, and is located between two USGS gaging stations. One USGS stream gauge is located approximately 16 miles upstream of the project area near Cloverdale (USGS gauge # 11463000 drainage area 503 square miles). The Cloverdale gauge is situated above the confluence of a major tributary, Big Sulphur Creek (85 square miles), and many other tributary streams, which increase the drainage area contributing flow to the project reach by about 200 square miles. As a result, flows measured at the Cloverdale gauge under-represent flows in the project reach. Another USGS streamflow gauge is located approximately 17 miles downstream of the project reach near Healdsburg (drainage area 783 square miles USGS gauge # 11464000), which probably over-represents flows in the project area. It is likely that flows within the project reach are closer to those flows measured at the Healdsburg gauge since it has a similar drainage area to the project reach.

Streamflow records for the Cloverdale gauge are available from 1952 to the present and show that annual flows range from 99.2 cubic feet per second (cfs) in 1977 to 2,144 cfs in 1983. A maximum peak flow of 55,000 cfs was measured on January 31, 1965; similar magnitude events occurred on December 31, 2005 (50,700 cfs) and in January 1995 (39,400 cfs).

Records at the Healdsburg gauge available from 1940 to the present and show that mean annual flows range between a minimum of 101.5 cfs in 1977, a record dry year, and 3,277 cfs in 1983, a record wet year. Maximum peak flow was measured at 73,000 cfs on January 9, 1995, with similar events occurring on December 23, 1964 (71,300) and February 17' 1986 (71,100 cfs). Peak flow at the Healdsburg gauge was 58,900 cfs during the December 31, 2005 event. Streamflow data show the “flashy” nature of the Russian River in response to heavy rainfall where most large storms increase flow at these gauges by 1 foot per hour. The watershed above the project site requires little antecedent rainfall for saturation and runoff production and it lacks substantial natural storage and reservoirs, allowing for a rapid rise in river flow. Damaging floods along the river, particularly in the lower reach near Guerneville, are common. In January 2006, for example, Guerneville and other communities were severely flooded in about a ten year recurrence flood.

Peak flows within the Russian River, including the study area, are extremely variable and episodic storm to storm and year to year. Episodic floods are widely spaced in time between consecutive years of small peak events. Episodic large floods are most related to intense El Nino rainfall events, which occur once every ten years on average (i.e., large floods such as those in 1937, 1940, 1955, 1964, 1986, 1995, 1997, 2003, 2005). As a result, transport of gravel and other sediments varies greatly year-to-year because episodic larger events carry most of the sediment (see discussion below). Most of the coarse sediment delivery to the main stem of the Russian River occurs during high flow events in years when rainfall rates are sufficient to erode hillslopes and deliver sediment to its tributaries, whereas smaller, more common flows typically redistribute deposits within the river channel from the larger events (Syar 2005b p32).

A measure of the frequency and magnitude of high flow events is based on the peak annual flood, which is commonly reported as a flood-frequency or recurrence interval. Less frequent hydrologic events have a greater flow magnitude than more frequent hydrologic events and have the potential to transport more sediment and provide greater aggregate recharge. Knowing the annual maximum flow for any given year provides an indication of the relative amount of sediment that was likely transported in that year. A summary of the flood magnitude and associated recurrence intervals for the Cloverdale gauge and the Healdsburg gauge are provided in Table 3.2-1.

Table 3.2-1
Flood Frequency for Cloverdale and Healdsburg Gauges, Russian River[1]

Flood Recurrence Interval	Cloverdale Gauge (11463000) cfs	Healdsburg Gauge (11464000) cfs
1.20	11,500	15,500
1.25	12,400	18,400
1.5-Year	14,900	23,300
2.0-Year	18,700	32,200
5.0-Year	28,900	48,700
10-Year	39,500	64,900
25-Year	52,000	71,500
50-Year	70,300	120,700
100-Year	80,600	138,300

[1] Flood frequency calculation based on instantaneous peak flows for water years 1960–2007
Source: ENTRIX (2010)

The dominant discharge (sometimes referred to as the channel forming flow, bankfull flow, or the effective flow) is the discharge that transports the most sediment over the long-term. The dominant discharge generally equates to bankfull discharge, which is the discharge at which channel maintenance is the most effective at moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work that results in the average morphologic characteristics of the channel (Dunne and Leopold, 1978). The dominant discharge is the flow that performs the most work in terms of sediment transport (Wolman and Miller, 1960), and is therefore responsible for maintaining the channel dimensions, pattern, and planform. While larger flows may transport more sediment for a single runoff event, their cumulative effect on the channel morphology is not as significant as more frequent moderate high-flows. Similarly, frequently occurring small magnitude flows do not transport enough sediment to control channel morphology (Knighton, 1998).

For rivers in equilibrium, the bankfull (dominant) discharge is commonly accepted a flow that occurs about two out of every three years (approximately the 1.5 year recurrence interval). Based on analysis of discharge records using data from USGS gaging stations in North America, bankfull likely encompasses a range of flow with return intervals from 1.05 to 1.8 years (US EPA, http://www.epa.gov/warsss/sedsource/bankfull.htm). Years in which the bankfull (dominant) discharge is met or exceeded will have a greater likelihood of transporting a larger sediment load, and thus potential for aggregate recharge, than years in which the flow is less than the bankfull discharge. Identifying the flow that corresponds to the bankfull discharge is best determined from extensive sediment transport data obtained from field studies. To date, there have been relatively few field data collection efforts in the lower Alexander Valley or the Russian River related to sediment transport, with most studies relying on sediment transport equations, hydraulic modeling, and field identification of bankfull stage indicators.

An important concept in managing gravel mining is to protect and maintain geomorphic processes by conducting mining only above the bankfull discharge elevation (NOAA, 2004). The bankfull discharge has been estimated by a previous study of the Russian River to be 9,300 cfs at Cloverdale and 16,000 cfs at Healdsburg (PWA, 1993). The 1993 study relied on suspended sediment records at USGS gaging stations, but no field collected bedload transport data, to estimate the dominant discharge. A more recent study that relied on identification of field features, primarily the formation of point bars as a geomorphic indicator that correlates with the bankfull discharge, estimated that a 5,000–7,000 cfs discharge may be the dominant discharge in the lower Alexander Valley (Syar, 2005a). For this EIR analysis, the bankfull discharge in the Lower Alexander Valley is estimated to be approximately 11,000 cfs, which is higher (and thus more conservative) than either the PWA (1993) or Syar (2005a) study. An 11,000 cfs flow is nearly a 1.2-year recurrence interval flow as measured at the Cloverdale gauge (see Table 3.2-1). The mean depth, width, and cross-sectional area of bankfull flow for the Lower Alexander Valley can be estimated from regional hydraulic geometry relationships, as shown in Figure 3.2-1. Using the drainage area for the USGS Cloverdale and Healdsburg gauges, the estimated mean bankfull depth is 8–9 feet, mean bankfull width is 160–180 feet, and mean bankfull cross-sectional area is 1,200–1,700 square feet. Hydraulic modeling for the Lower Alexander Valley confirms that at a flow of about 11,000 cfs, the mean flow depth above the low flow water surface elevation (at 200 cfs) is approximately 8-feet (Figure 3.2-2).

Land and Water Use

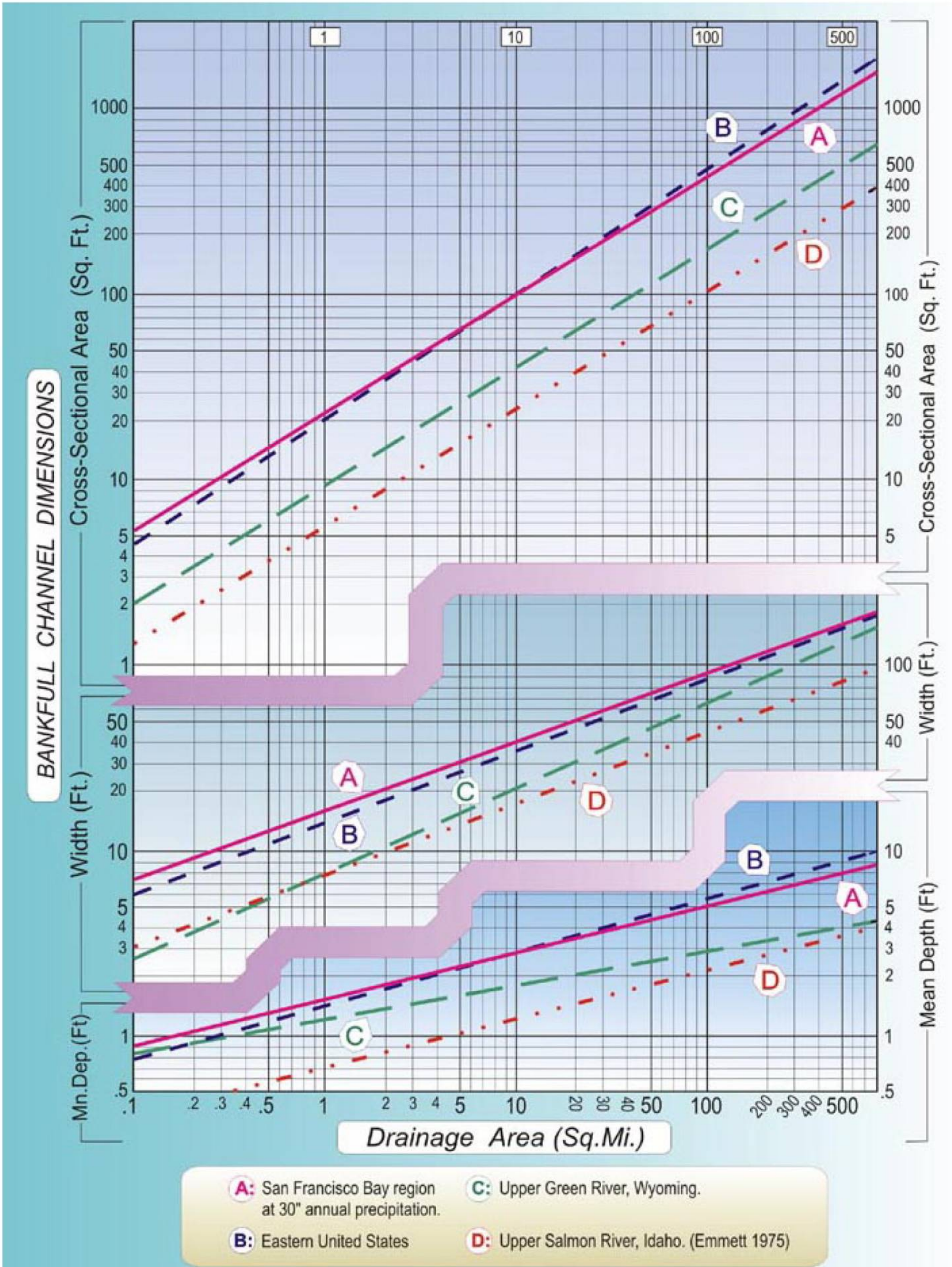
Alexander Valley is dominated by agricultural lands in lower lying areas and the valley bottom and by shrub and forest covered upland slopes. It includes the communities of Cloverdale and Geyserville, as well as over 13,000 acres of vineyards and large areas of grazing land and forested slopes. The deep alluvial soils and Mediterranean climate of the Valley are ideal for growing grapes. Vineyards have proliferated over the last few decades, replacing other crops and expanding into the surrounding hills, as the demand for quality wines from California has grown. Cloverdale, Geyserville and Healdsburg have experienced periods of growth as commercial centers for vintners, tourism and residential developments. Both Cloverdale and Geyserville have a relatively small urban footprint in the Alexander Valley and thus likely do not contribute substantially to hydromodification of the overall watershed or to the project area specifically. It is estimated that there are 1,971 active and inactive diversions by various entities in the Russian River watershed, 705 of which have the Russian River as a direct source (SWRCB, 2010). The uses of diverted water include municipal, domestic and agricultural, with industrial demands fluctuating with the activity of timber mills. The State Water Resource Control Board records list a total of over 1,500 water rights filings for the Russian River watershed. SCWA estimates that the present total-diversion demand on the Russian River and its tributaries by all users, including agriculture and urban, is 110,000 to 120,000 acre-feet per year, with actual amounts depending on the amount of rainfall and related river flow per year.

Historically, dating back to the late 1800s, agricultural development in the floodplain of Alexander Valley has encroached into the active meander zone of the river and decreased the width available for natural river migration and sediment deposition. The active river meander belt has narrowed by as much as an estimated 50% (B. Cluer, pers. comm.) due to land reclamation, levees and bridge crossings. This narrowing of the river meander belt, increases the hydraulic force (shear stress) on the channel bed and banks, and likely caused lowering of the river bed (i.e., channel bed degradation) (Syar 2005b) and increased bank erosion. The natural floodplain of the river has been disconnected by levees and fill, and riparian forests have been cleared, filled, and leveled for conversion to cultivated fields. These changes converted the channel from a natural equilibrium channel into a confined artificial channel often necessitating the installation of bank protection structures and flood control structures. These changes likely generated increased soil discharges and sediment carried by the river, but the extent of this effect is not known.

Downstream of the project area, Syar's predecessor the Basalt Rock Company implemented a U.S. Army Corps of Engineers (USACE)-designed flood control project between 1940 and 1970 to control flooding and erosion along agricultural lands in the floodplain. The project involved dredging, straightening and narrowing a 5-mile long reach of the river, removing gravel from the riverbed to depths of up to 50 feet in some locations. The channel has subsequently filled to within 14 feet of its original elevation (Syar 2005b p6), but this change resulted in a reduction of the active channel[1] area from over 2,300 acres to just 800 acres.

The January 2006 flood (recurrence of about 12-years) changed channel morphology and caused significant damage to property, businesses, and infrastructure including roads, bridges, and buildings. Extensive damage occurred to the Geyserville Bridge, located within the study area, where riverbed scour caused irreversible damage to the bridge piers and the bridge was replaced in 2006. The recent floods of January 19–23, 2010 necessitated the installation of $1.5 million of rip rap slope protection on the upstream side of the new bridge to prevent erosional failure of the Highway 128 roadway approach to the west side of the bridge.

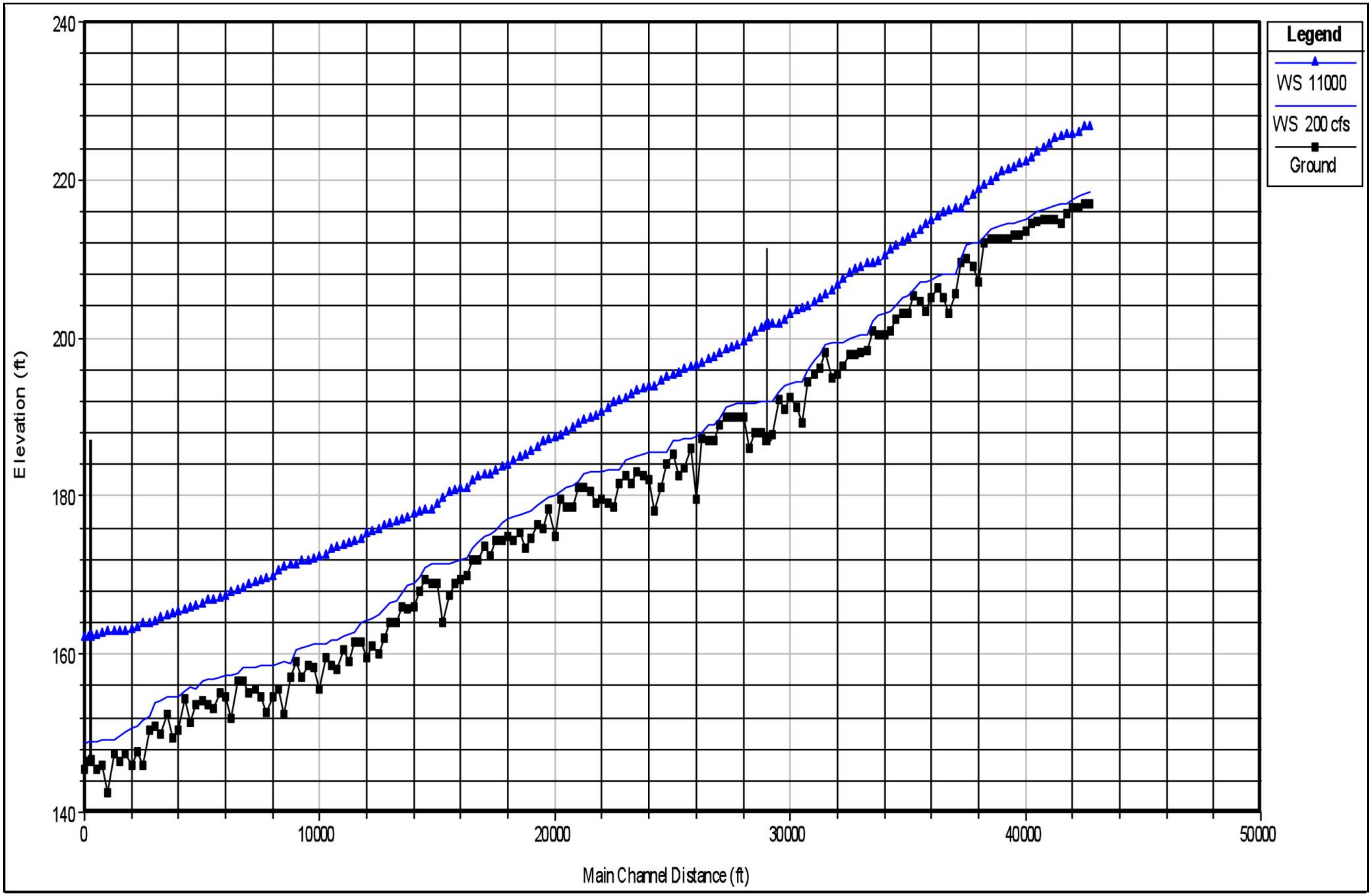
[1] Active channel is defined as that part of the river bed from the bottom up to the elevation that shows evidence of recent (over several years) sediment transport and is, thus active in terms of sediment depositing and scouring processes that create the channel pattern, dimensions, and planform.



Source: Dunn and Leopold (1978)

Figure 3.2-1

Regional Curves Showing Bankfull Dimensions vs. Drainage Areas for various hydro-physiographic provinces.



Source: Syar (2005b)

Figure 3.2-2
Longitudinal Profile of Water Surface Elevation at 11,000 cfs Based on Hydraulic Modeling

Commercial gravel mining has occurred within the Russian River in the Alexander Valley since the early 1900s, primarily to provide materials for local construction projects. The rate of instream mining increased from the 1940s to the early 1980s, which had the effect of creating and maintaining an artificially straight and narrow channel, and supplementing landowner's efforts to fill and reclaim former river bed to agricultural uses. From 1981 to 1993 gravel extraction in the Alexander Valley (Lower and Upper Reaches combined) removed an average of 680,000 tons per year, with rates peaking over 900,000 tons in some years. From the inception of the ARM Plan in 1994 to 2001, the average annual extraction rate substantially decreased to 123,000 tons per year (tpy). Since 2001 no mining permits were sought, and no mining has occurred in the lower Alexander Valley. However, mining has recently occurred upstream, in the Upper Alexander Valley, with the last extraction by Shamrock occurring in 2006. Syar mined aggregate downstream of the project site in the Middle Reach in 1987, 2002, and 2007 (Seppeler, pers. comm., 2009).

As described above, the geomorphology of the Russian River in the Lower Alexander Valley has undergone substantial changes since late 1800s as a result of land-use practices. The former wide river channel and meander belt corridor have been substantially narrowed and confined by agricultural land reclamation, levee and bridge construction, reservoir development, and hardening of stream banks. Photographic evidence shows that by the beginning of the 1900s, nearly the entire valley floor had been converted from a condition of riparian and wetland features to agriculture (Syar, 2008). Gravel mining from the 1940s to the 1980s was largely unregulated and removed substantial amounts of aggregate, including the direct excavation from the channel thalweg.

Channelization of the Russian River profoundly altered its natural fluvial processes. The river became increasingly disconnected from its former wide floodplain. The hydraulic forces that once were relieved by overbank flows onto the floodplain have become concentrated into a smaller, narrower channel which in turn further increased erosion of the channel bed. Prior to the 1980s the channel had incised by about 4-8 feet, which left high, over-steepened erodible banks (Syar, 2008). The natural process of lateral channel migration across the valley flat in response to the deposition of sediment onto point bars had been partially interrupted. The cumulative effects of numerous land use activities on the floodplain have resulted in a riparian successional imbalance. Mature, late successional riparian forests have substantially decreased over time along the Russian River (Sonoma County Water Agency, 2003). Riparian vegetation was further reduced as overbank flooding, sediment deposition, and lateral channel migration was limited. This also reduced the recruitment of large woody debris to the channel, which provides diverse and complex hydraulic conditions, an important feature of aquatic habitat. Overall, aquatic habitat was simplified. The Russian River continues to deposit sediment building bars, and retains its natural dynamic tendency for lateral meandering as the river attempts to re-exert its natural sinuous form.

Geomorphology

Several types of data have been collected and various analyses have been performed to evaluate recent geomorphic trends and changes within the Alexander Valley. These include:

- Streamflow and precipitation data;
- Cross sectional survey data;
- Thalweg elevation data;
- Historical aerial photography; and

- Estimation of sediment storage volumes and sediment recharge rates by hydraulic and sediment transport analysis.

Overview of Channel Morphology and Fluvial Processes

A river can transport only as much sediment as its energy allows, therefore, they maintain equilibrium between their flow energy and the sediment materials conveyed. Rivers are constantly readjusting to changing flow conditions and changing sediment loads. In general, as flows increase more sediment is entrained by the water and moved. A rising flow volume increases the capacity of the river to transport sediment. Similarly, as flow and velocity increase, the river develops the ability to move larger sized sediments along its bed. As flow volumes and velocities decrease, both capacity and competency of the river are reduced, with the result that the sediment load is dropped. Although these and other variables are complex, a given reach experiences an overall net increase (aggradation) or decrease (degradation) of sediment in different areas, which creates a variety of channel forms.

Geomorphologists have developed various models of bar formation and it is important to recognize that individual bars have complex and varied causes of formation, leading to their specific morphologies. In general, under normal high flow conditions (e.g., the 10 year flood event), hydrodynamic forces have the strongest potential to affect sediment at the upstream head of the bar and along its margin along the main river channel. The highest velocity of the water is at or just below the water surface over the thalweg (the line connecting the lowest point in the channel bed) but the maximum turbulence is located near the bottom. Scour occurs where turbulence is strongest and exerts shear stress on the underlying sediment. Deposition occurs where turbulence in reduced.

As flow increases in the river, helical flow in the water column induces turbulence that creates secondary currents (perpendicular to the main flow line) with a downward converging movement on the outside of a meander bend, inducing erosion and scour of the bed, creating a pool. On the inner side of the meander bend, the rotary motion is upward, resulting in reduced flow and turbulence, causing the sediment load to be deposited along the inside of the meander. Backflow eddies cause additional accumulation of sediment on the inside of a meander bend. With successive floods over time, the longitudinal bar grows in the downstream direction and is filled with sediment until the steep side faces the river side. This form is the typical point bar, but variations are not uncommon. Its composition is predominantly bed load, whereas the sediment that fills the trough is derived from suspended load (generally finer particles and float debris).

If no controls exist on meander migration, the point bars grow as the meander moves downstream. Under the infrequent severe floods, the processes become so intense that the river channel is changed and the configuration of the bars and meanders can be altered substantially.

Directly linked to the processes of bar formation and location are pools and riffles, important features of the river channel for aquatic habitats. The crossover of flow from one side of the meander belt to the other is typically correlated with the formation of riffles located between bars. In general, riffles are typically scoured at low flow and covered by sediments at high flow. Pools are located downstream from the axis of a bend and along the outer edge of a bar. Pools typically are scoured during high flow and filled by sediments during low flow. However, pool and riffle sequences are not precisely fixed and change over time with variable flow conditions. This is particularly true for the Russian River, which as noted previously, has episodic flood conditions which substantially affect flow and sediment transport, erosion, scour and sediment deposition, roughness of the wetted perimeter, and therefore channel morphology. However, on the whole, except for large flood events, the spatial arrangements and geometry of the channel, point bars, pools and riffles are the result of the river's dominant channel forming discharge.

Sediment transport capacity (volume transported by a given flow) increases greatly with each increment of flow increase. Increased flow also increases the size of sediments moved, a factor called sediment transport competence. Sediment transport is distinguished by its mode of transport:

- Bedload consists of the coarser sediments (sand, gravel, cobble boulder) which are transported by bouncing or saltation (a parabolic trajectory through the water) along the river bed;
- Suspended load are the finer particles, fine sand, silt and clays that are transported by suspension in the water column from hydraulic turbulence.

Larger floods also introduce more sediment into the mainstream from upstream sources and from tributaries.

Both sediment transport capacity and competency are functions of river discharge and hydraulic depth and velocity. In general, sediment transport increases as a power function of the increase in discharge. Sediment ratings show that for each unit increase in water discharge, the sediment transported experiences a greater increase. This effect is most pronounced during high river flows when even a small increase in flow can result in an enormous increase in sediment load in both the project reach and from upstream and tributaries.

Large floods can dramatically increase sediment movement down tributaries. During intense rainfall, landslides may be triggered which can deliver sediment straight into flood flow increasing the volume of sediment delivered to the project reach. High flows increase competency moving large coarse sediments up to boulder size including substantial transport of bedload. In fact, most of the total volume of bedload moved by a river during a decade can occur in a few days of large scale flooding. As more water flows through the river in a storm event, hydrodynamic forces increase (velocity, turbulence, eddying, vortex formation, convergent and divergent flow lines, and helical flow), river level rises, and shear stress on the wetted channel perimeter increases with the result that greater sediment loads are entrained and transported. The result is that the erosive power of the river is dramatically increased, with scour of the bed and frequently undercutting the toe of the bank causing bank collapse.

After a storm event, the flow diminishes and the sediment transport power of the water subsides, erosive forces diminish and the sediment load is dropped or deposited in the channel. Subsequent flows continue to move and redistribute the sediment from the high flow events. However, the lower flows result in reduced ability of the river to transport bedload. Most of the sediment transported by the flow is suspended load. The processes of sediment transported in suspension and bedload movement are the basis for replenishment of in-channel sediments, including those proposed to be mined from gravel bars. High winter flows are particularly important as an aggregate source because they carry the coarse materials. While the finer suspended material comprises the greatest volume of transported material in the river, it has more limited value as an aggregate resource than the coarse fraction comprised of sand, gravel, pebbles, and larger particles.

The County's first Aggregate Resources Management Plan, adopted in 1981, limited mining to bar skimming operations. In 1994 the ARM Plan was updated to establish mining based on the concept of a sustainable yield, which substantially reduced the amount of instream mining that could occur. The reduction in mining has allowed the channel bars to aggrade since 1994. If left to balance itself naturally, the Russian River could eventually develop a wider, more braided and meandering channel. A wider channel was evaluated as a policy option in the 1994 ARM Plan as the “streamway concept,” but was rejected because it would encroach upon valuable agricultural lands and potentially cause damage to infrastructure (e.g., wells and bridges). The narrow, confined channel creates disequilibrium in the river system and requires careful management of the banks as well as the instream deposits to maintain the status quo.

The Russian River through the Lower Alexander Valley Reach extends for approximately 10 miles (RM 46 to RM 56). It has a low gradient (approximately 0.0015 foot vertical per horizontal foot) indicative of the overall depositional tendency of the reach. The channel has a sinuosity ratio of 1.2 (stream length/valley length) which is a moderately sinuous, meandering channel planform that contains both alternate and point bar types[2]. The meander wavelength (from apex of one bar to apex of next bar) is approximately 2,400 feet, and the amplitude of the meanders are about 1,000 feet. The width of the meander belt corridor ranges from approximately 1,000 feet up to 1,600 feet. The hydraulic force of the river during high flows tends to cut the outside bend, eroding into the bank opposite the bar, while depositing sediment on the bar inside the bend. Over geologic time this process causes the river to migrate laterally across the valley floodplain by eroding and depositing sediment and results in a sinuous pattern of channel meanders. The sinuous meanders also tend to migrate over time in a downriver direction.

Sediment Budget and Aggregate Recharge

The Russian River and its system of tributaries transport sediment from the river’s headwaters to the Pacific Ocean. The volume of sediment transported is highly correlated with the occurrence of large floods and the El Nino climatic conditions. The supply and transport of sand and gravel sized sediment is particularly important in determining channel form, and reductions in their supply has the potential to induce channel changes (Kondolf 2002 p3). The average annual sediment recharge is the estimated amount of sediment that is naturally deposited or replenished in the Russian River over the long term. This is often referred to as “safe-yield”, that is the amount of aggregate removal that could occur without depleting the amount of sediment deposited into channel storage and thereby minimize the risk of adverse channel geomorphic responses.

In general, the project reach has replenished gravel during large floods (great than 10-year recurrence) after mining. Instead of a steady, average annual replenishment, the bars in the project reach are recharged after large floods then subsequently mined. In the past, by the time the previous large flood’s gravels are mined, another large flood event occurs to replenish and the mining cycle recurs. For example, the gravel deposited by the 1986 floods was mined between 1987 and 1994 in the project reach. The present bars have been replenished by several large floods, including January and March 1995, January 1997, December 1998, and January 2006. No mining permits have been sought in the lower Alexander Valley since 2001.

[2] Alternate bars form in straighter channels where deposits alternate on right and left banks. The low-flow channel meanders around the alternate bar forms. Point bars are found on the inside of a channel meander. The point bar is formed by secondary helical currents that scour and carry sediment from the opposite cut-bank, and across the channel floor and up onto the face and top of the point bar where the sediments are deposited. The point bar itself cause the channel to laterally migrate, whereas lateral migration processes are not associated with alternate bar forms.

One of the key characteristics of the project reach is the reduction of sediment transport during larger floods at locations where backwater controls increase due to constrictions in the channel and floodplain. Two areas in the project reach, upstream of the Geyserville Bridge constriction and at the downstream end of the valley near Jimtown Bridge, actually experience decreased sediment transport causing significant local sediment deposition during the peak flow of large floods. The backwater effect occurs when high magnitude flows cannot readily pass through the constricted area, allowing sediments in transport to deposit upstream of the constriction. This results in large flood-deposited point bars SD-4 and SD-5 upstream of Jimtown Bridge, and S-9 and S-10 upstream of Geyserville Bridge. The alternate bar form is more prevalent downstream of the Geyserville Bridge, however, Bar 8 has also grown significantly in the hydraulic expansion zone below the bridge. Hydraulic modeling (HEC-RAS) of the study reach confirms these locations as backwater sediment deposition zones prone to sediment accumulation during larger flood flows (Syar 2005 p40).

Studies done in conjunction with the adoption of the 1994 ARM Plan estimated that gravel recharge within the Alexander Valley (combined Upper and Lower Reaches) occurs at an average rate of approximately 50,000 cubic yards (100,000 tons) per year (Sonoma County, 1994). The 1994 ARM Plan acknowledges considerable uncertainties associated with estimating recharge rates. Over a period of time with intensive monitoring the average annual sediment recharge can and should be updated. Two sources of monitoring data that rely on different measurement techniques for estimating aggregate recharge are presented.

The 1994 ARM Plan requires annual monitoring of the mining reaches of the Upper and Lower Alexander Valley and the Middle Reach, including sediment storage changes. Sediment storage monitoring for the ARM Plan is determined by comparing changes in monitored cross-sections over annual and long-term time periods. The average change in cross-sectional area between two adjacent cross-sections is multiplied by the distance between the cross-sections to obtain a volumetric change (cubic yards) in the channel area. The individual changes in channel volume between cross-sections are summed and added to the annual in-channel gravel extraction amounts as reported to Sonoma County. The result provides the annual accrual or loss of sediment volume. For the Lower Alexander Valley Reach, over the 1994–2008 period, there were 660,000 cubic yards of sediment extracted and 1.7 million cubic yards of sediment recharge, resulting in a net sediment gain of more than 1 million cubic yards. The amount of extraction that occurred between 1994 and 2001 in the Lower Alexander Valley is about 39% of the estimated recharge from 1994 to 2008.

Since 1994, Syar has used Digital Terrain Model (DTM) data in the project reach to track changes in bar sediment storage. DTM is produced by aerial photogrammetry that is ground-truthed, and supplemented by underwater surveys conducted in the field. The DTM data is likely more accurate than using widely separated cross sections as described above. Figure 3.2-3a-c shows the amount of bar elevation change (sediment storage increase) in the Lower Alexander Valley Reach for 1994 to 2007 using the DTM data. The DTM data has shown dramatic increases in bar elevations up to 20+ feet in places, but averaging 8 feet. Furthermore, the 1994 to 2007 records show that the increases in bar height has converted bar morphology from lower “alternate bar” types to larger and higher lobate-shaped “point bars” that drive increased lateral erosion and meandering. Channel filling and longer flow paths have decreased flood capacity and sediment transport capacity in the project reach. At three locations, the meandering and channel filling has evolved to a point where channel avulsion[3] in a large flood (above a ten-year recurrence) is potentially more likely.

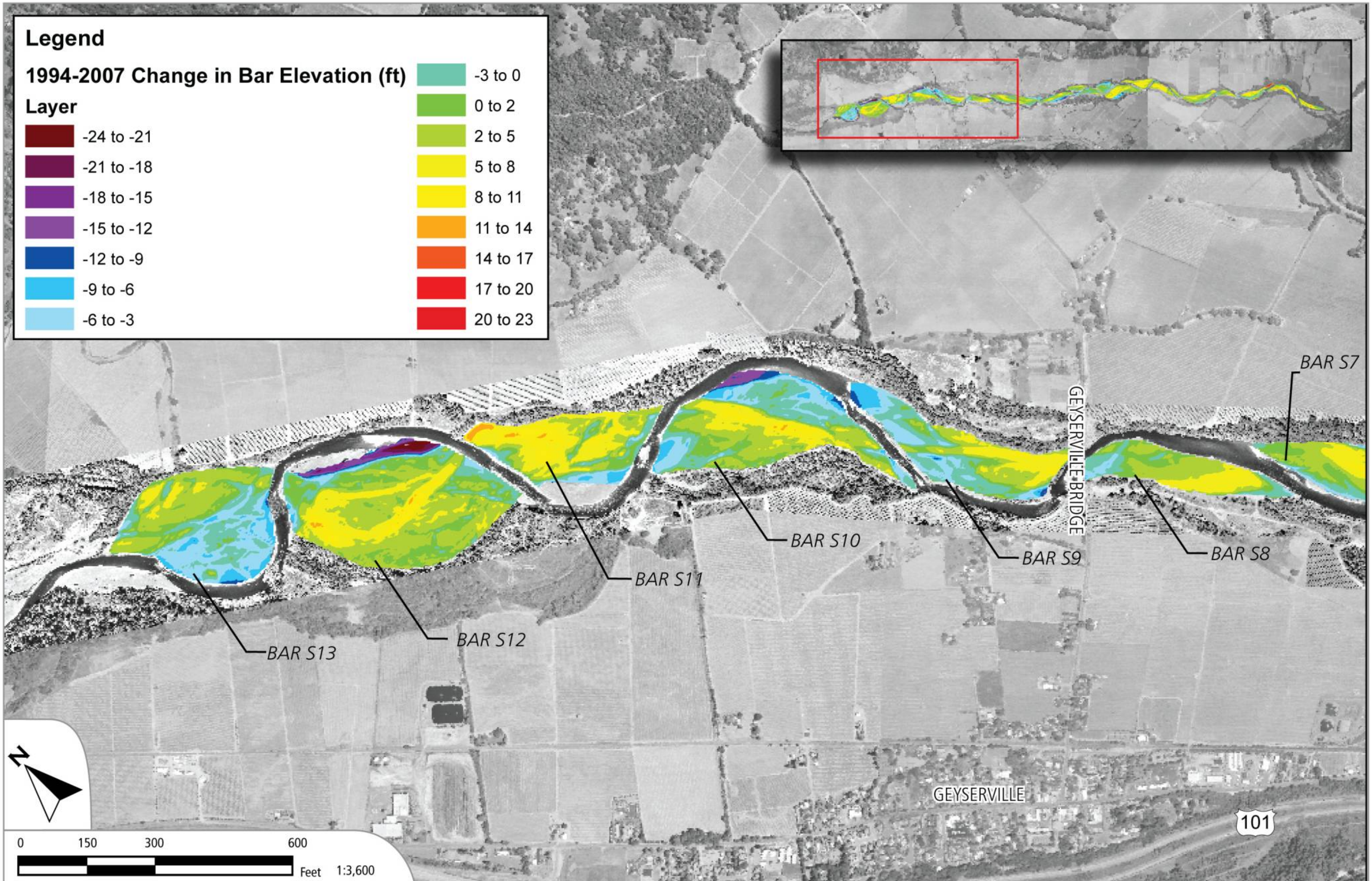
Monitoring of gravel bar volume shows that the project reach is in a depositional zone overall with an estimated 4.5 million tons (3.0 million cubic yards) of sediment between 1994 and 2007 (Syar, 2008) with an extraction rate of nearly 1 million tons (670,000 cy) over this same time period (ENTRIX, 2009.) Using Syar's DTM data, the average annual recharge rate would be approximately 346,000 tpy (230,000 cubic yards/year).

Thalweg Elevation

Major changes in the thalweg profile (the line connecting the deepest points of a river channel) indicate changes in bed elevation and slope and the vertical stability of the channel. Lowering of thalweg elevations may indicate channel incision, and rising of thalweg elevations may indicate aggradation (sediment deposition). Thalweg changes can also reflect a response to local hydraulic perturbations, such as bridges, or can result from transient movement of sediment through the low flow channel. In an alluvial channel such as the Russian River, the thalweg elevation may lower or rise from year to year, particularly in response to flood events, but over a longer time period the thalweg elevation should be relatively stable. Thalweg lowering can also be a response to sediment accrual on bars. As bars rise in elevation with sediment deposition, flows are increasingly confined to the portion of the channel around the outside perimeter of the bar. This increases hydraulic force on the bed and banks which can deepen the thalweg. Additionally, preferential lowering of the thalweg through pools is an indication of pool deepening, which is generally considered a benefit to salmonids. However, a trend of bed elevation lowering through riffles (which control the upstream pool depth) can have adverse effects including over-steepening of streambanks causing an increase in erosion, loss of pool depth, and a disconnection of the river channel from the floodplain. Figure 3.2-4 shows historic thalweg elevations in the Lower Alexander Valley from 1971, 1982, 1986, 1991, 1994, and recent thalweg elevation data from 2008. The historic elevation data show that the thalweg is not in a fixed position, and has oscillated both up and down over time. The data appear to indicate that the thalweg was higher in the 1970s and 1980s than it is today, but the thalweg today appears higher than in 1994. Conclusions regarding bed elevation changes over time should be made cautiously because there are relatively few data points over many miles of channel; additionally, several of the measurement points are at bridge locations, which tend not to be very representative of channel conditions.

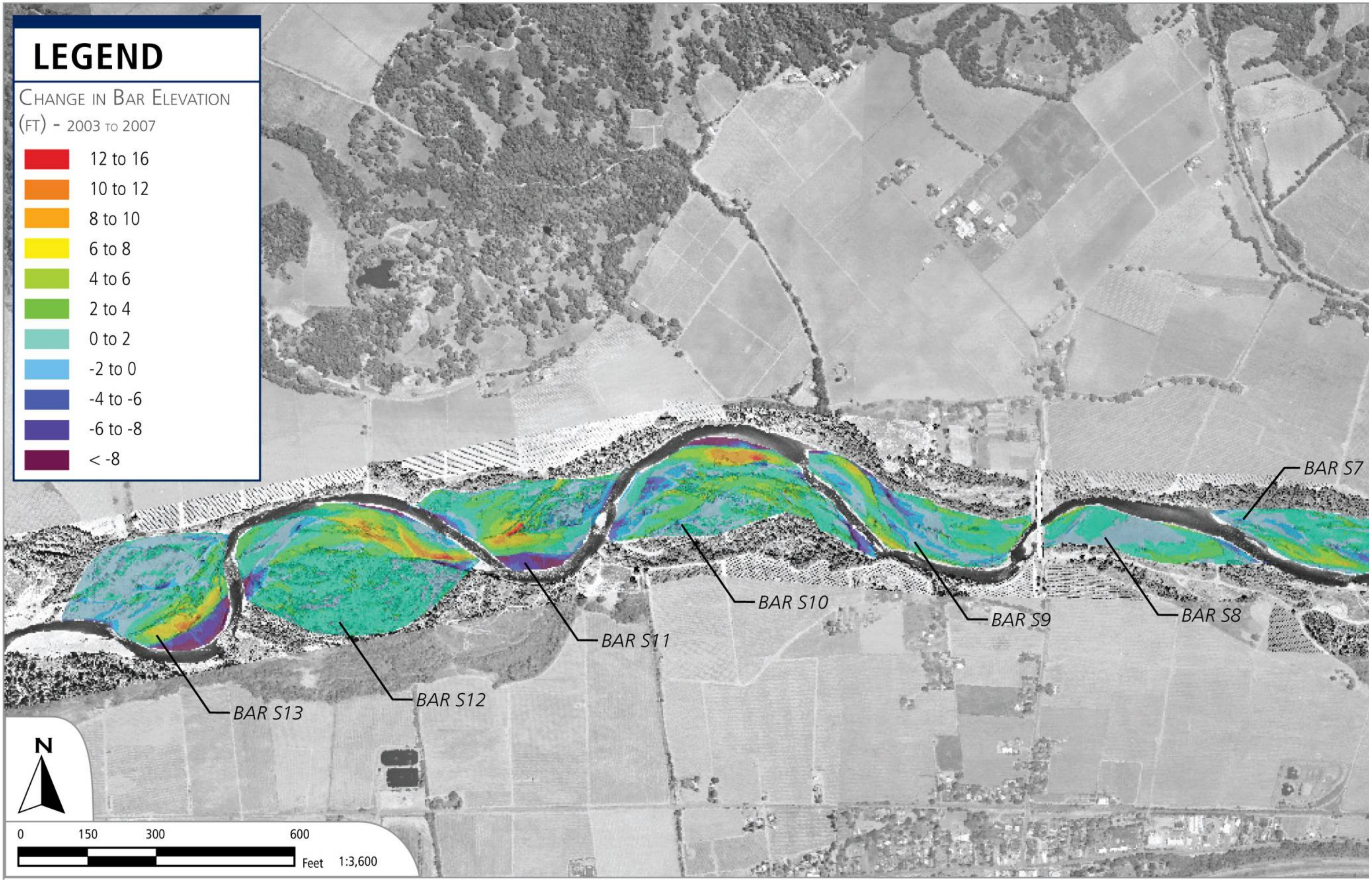
Prior to the early 1990s mining operations would remove an entire bar to 1 foot above summer low flow. This occurred in the Alexander Valley project reach and in the Middle Reach through the late 1980s. In these cases, temporary lowering of the thalweg was observed as well as widening of the low flow channel into shallow areas. Full bar skimming reduces the elevation of the bar to a low alternate bar form. Riffles in the mined reach were eroded (thus inducing thalweg lowering). Removing all materials 1 foot above low water from a series of bars removed the backwater control created by the head of bar, thereby increasing hydraulic force over the riffles and bars. In the last occurrence of full bar skimming, drought conditions persisted for 8 years (1987–1994) so that minimal volumes of bedload entered the mined reaches; much of this was trapped at the head of bars as the river attempted to restore equilibrium. The drought broke in 1994 and most of the mined bars increased in elevation allowing some concentration of force

[3] An avulsion is a large scale, and swift change in the channel position. Avulsions occur usually during high magnitude flows. For example, an avulsion occurs, when a river abandons its meander belt and establishes a new position on the valley floor.



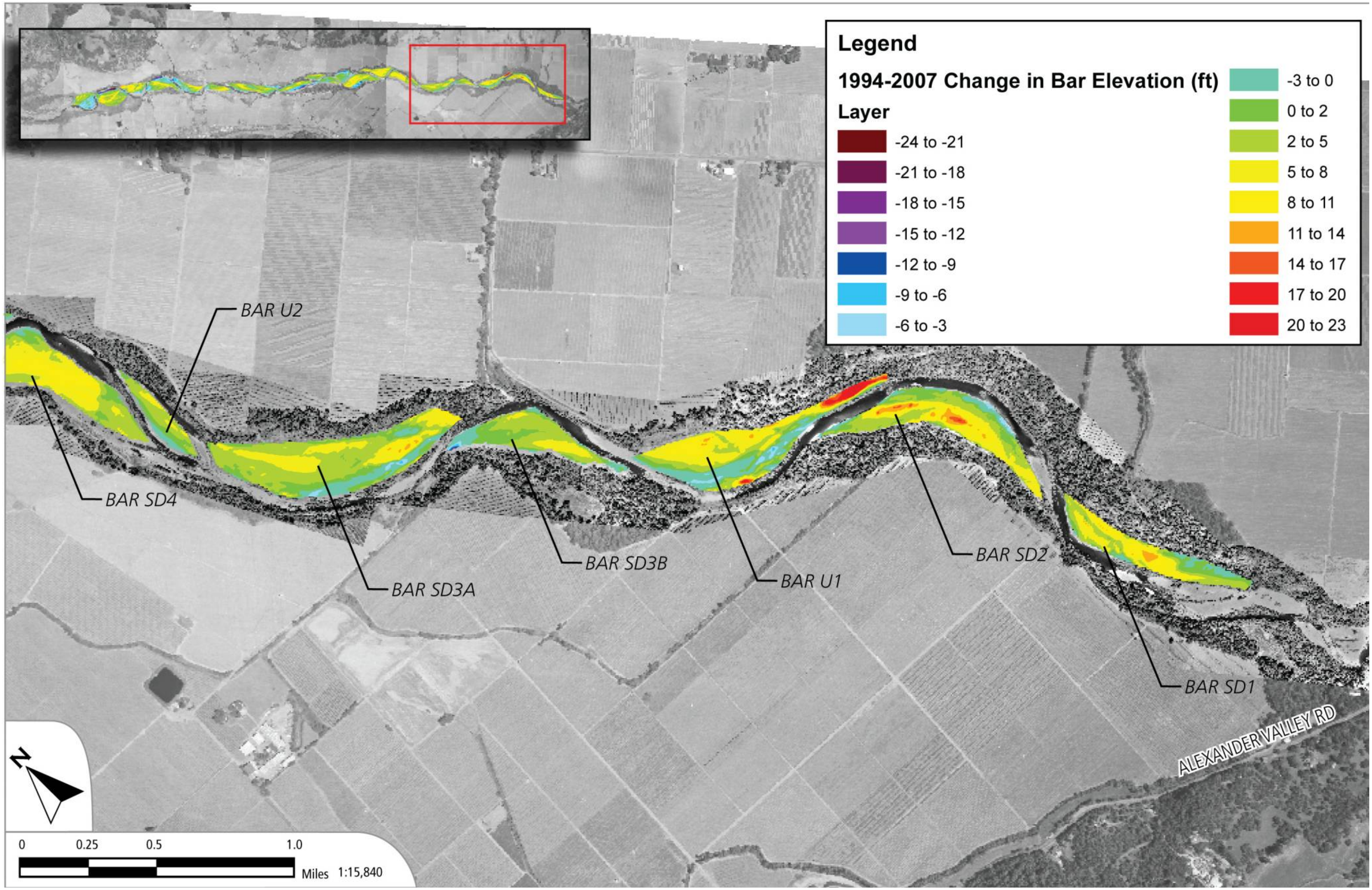
Source: Syar (2010)

Figure 3.2-3a
Changes in Bar Elevation in the Alexander Valley from 1994 to 2007



Source: Syar (2010)

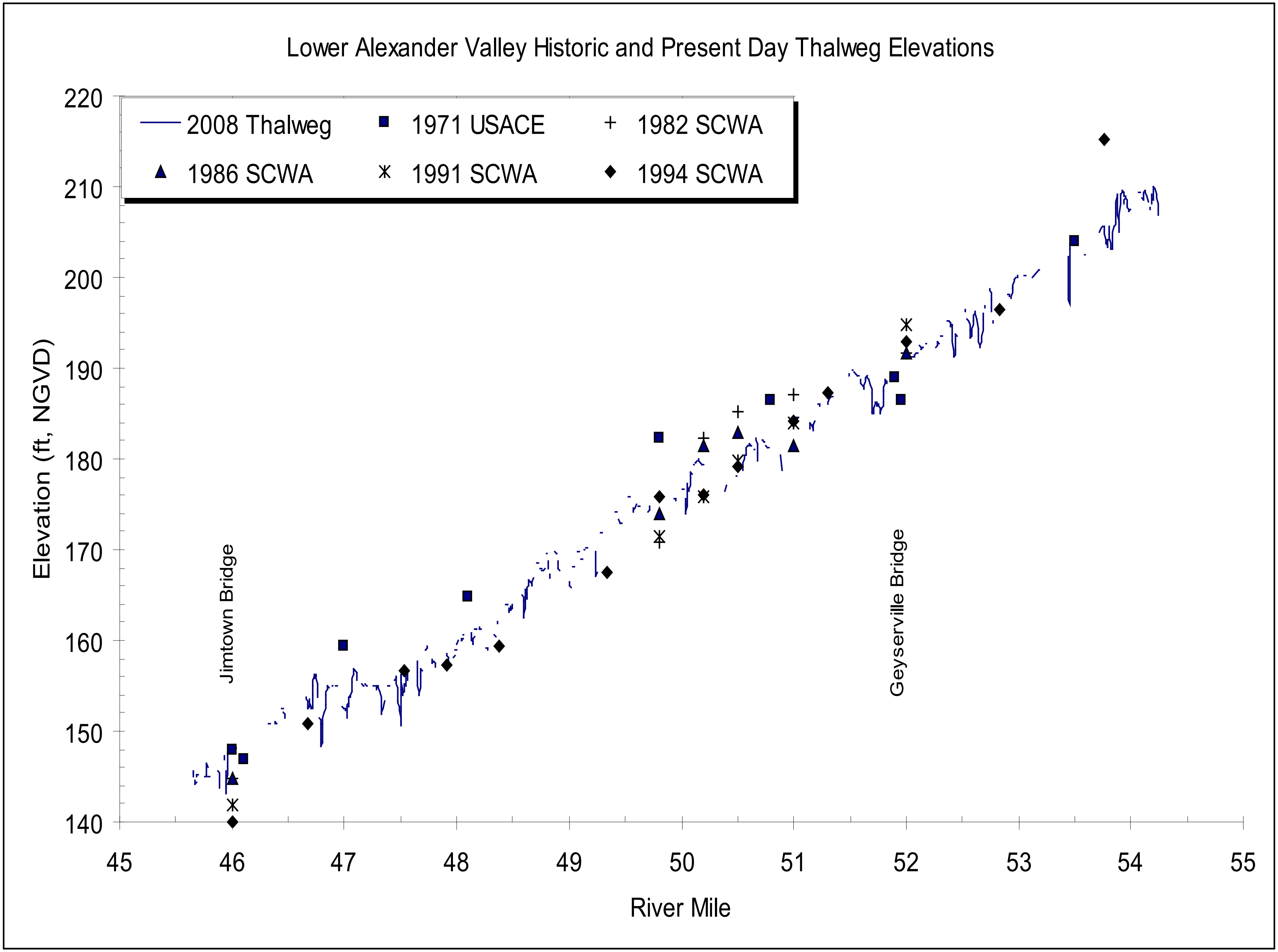
Figure 3.2-3b
Changes in Bar Elevation in the Alexander Valley from 1994 to 2007



Source: Syar (2010)

Figure 3.2-3c

Changes in Bar Elevation in the Alexander Valley from 1994 to 2007



Source: Sonoma County (1994) and ENTRIX (2010)

Figure 3.2-4
Historic and Present-Day Thalweg Elevations, Lower Alexander Valley

over riffles and pools. The large floods of January and March 1995 fully replenished the mined bars and, in the case of the Middle Reach, caused the thalweg to fill and rise up to 4 feet. Since intensive mining ceased over 15 years ago, the mined bars have increased in height 6–8 feet on average. These events demonstrate that retained buffers have an important role in retaining key channel processes and retaining thalweg, riffle, pool and bar forms. Moreover, it also demonstrates the resilience of the Russian River with a high sediment load to recover in a relatively short period from negative effects of mining, if mining is discontinued.

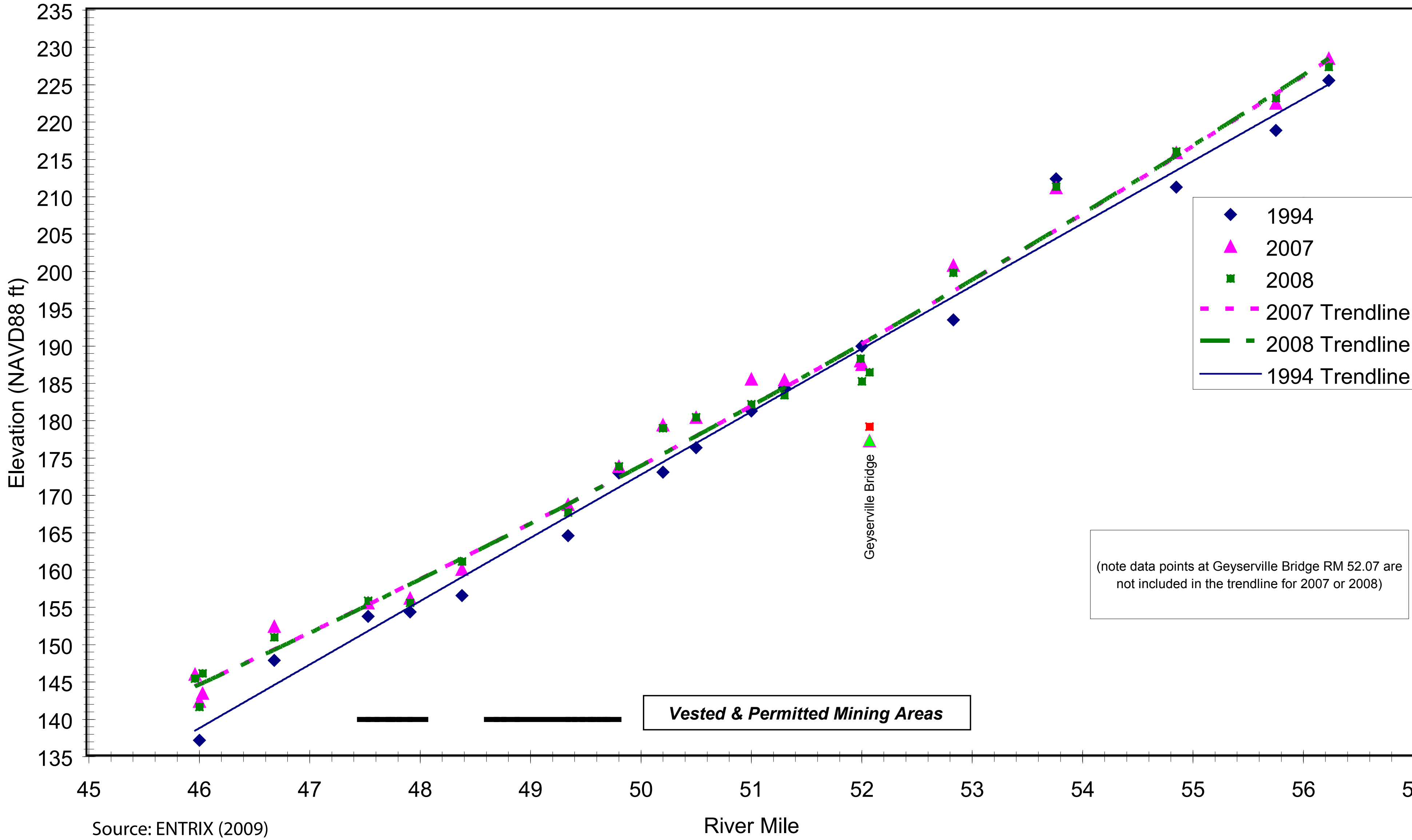
Swanson (Syar, 2005b) evaluated thalweg profiles and found that the low flow channel has been relatively stable between 1994–2001, which included several major floods, as well as the largest peak flow on record at the USGS stream flow gauge near Healdsburg (#11464000). Several sites showed changes including progressive local scour in the vicinity of the Geyserville and Jimtown bridges since 1994. Swanson indicated that the total scour around both the Geyserville and Jimtown bridges is related to local hydraulic force at the bridge support piers and the constriction of the bridge and fill approaches, which reduced floodplain width by 50% and added onto the general large-scale 6–8 foot lowering of the thalweg profile resulting from land reclamation and the encroachment of agricultural uses.

Annual ARM Plan monitoring has evaluated thalweg elevations in the Lower Alexander Valley since 1994. Between 1994 and 2008, Lower Alexander Valley averaged thalweg elevations cumulatively decreased -0.8 feet, with nearly all of that decrease occurring between 1997 and 2003 (ENTRIX, 2010), as shown in Table 3.2-2. PRMD halted mining in the Lower Alexander Valley after it was observed that DeWitt had over mined bars within its permitted area (RM 47.5 to RM 49.8) in 2001, and it was determined that there had been a drop in the elevation of the thalweg in the reach, although most of that thalweg lowering was later determined to have

Table 3.2-2
Lower Alexander Valley Reach Average Thalweg Elevation Change for 1994 to 2008

Year	Number of Cross-Sections with Same or Increased Thalweg Elevation	Number of Cross-Sections with Decreased Thalweg Elevation	Net Change in Thalweg Elevation From Previous Year (feet)
1994	6	7	0.0
1995	8	9	0.3
1996	10	12	0.0
1997	9	8	-0.5
1998	11	16	-0.2
1999	11	16	-0.1
2000	14	17	-0.1
2001	12	9	-0.1
2002	11	11	0.2
2003	11	27	-0.6
2004	11	10	0.0
2005	9	12	-0.1
2006	12	8	0.1
2007	12	9	0.0
2008	10	11	0.3
1994 2008	157	182	**-0.8**

Source: ENTRIX (2010)



Source: ENTRIX (2009)

Figure 3.2-5

Thalweg Elevations Lower Alexander Valley for 1994, 2007, and 2008 Based on Cross-Section Surveys.

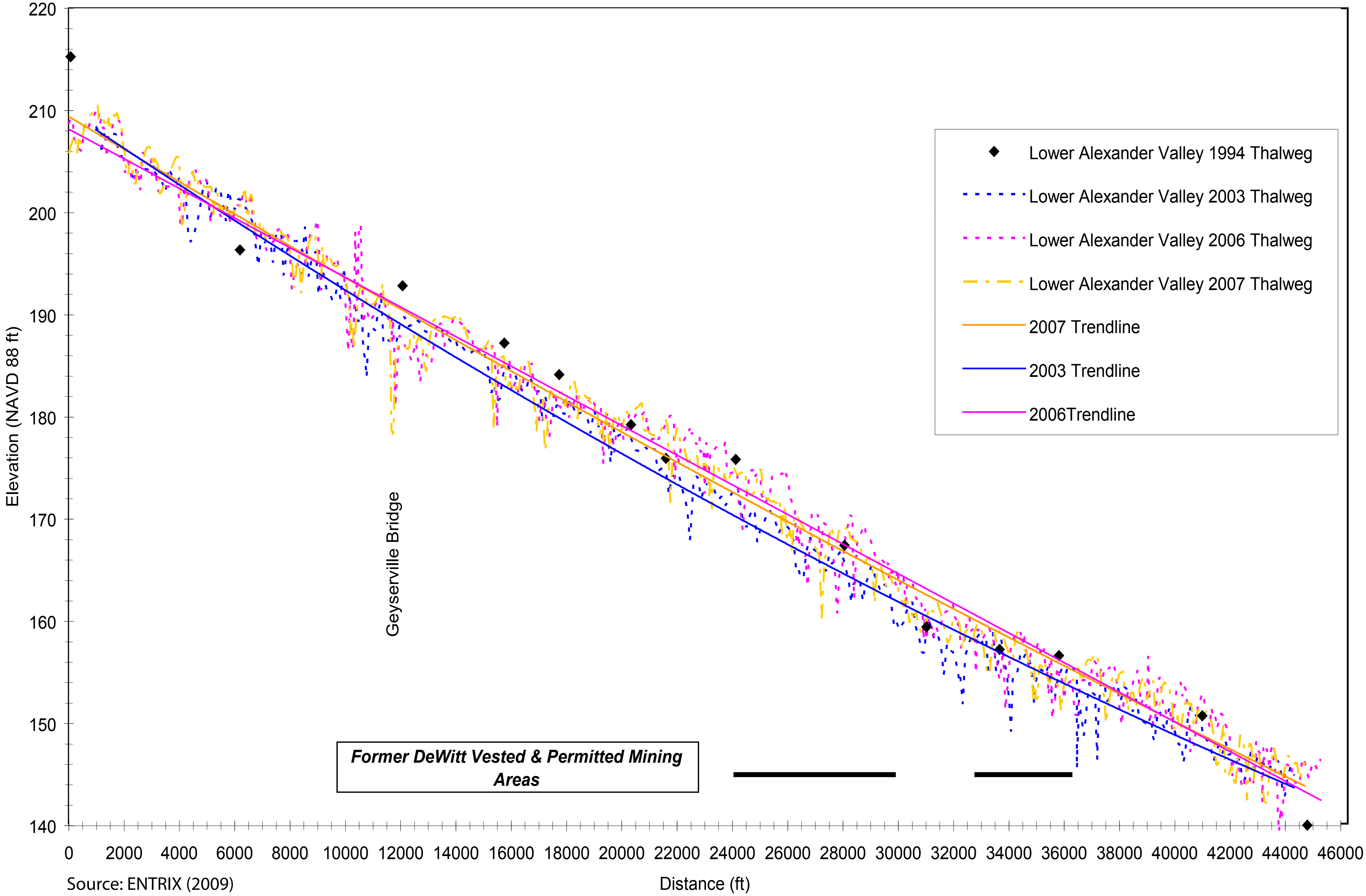
occurred well upstream of the permitted mining reach (ENTRIX, 2005). It was not known whether the declining thalweg elevations at that time were due to natural fluctuations of the river channel or if they reflected a longer-term response to bar skimming operations (either historically or ongoing). After 2003 the thalweg elevations have been stable, and slightly increasing in elevation. A plot of the thalweg elevation profiles for 1994, 2007, and 2008 is provided in Figure 3.2-5. The thalweg plot trendlines show that the profile has slightly increased in elevation near the downstream portion of the reach where the former DeWitt permitted mining area is located. This is in contrast to the calculated cumulative average decrease of -0.8 foot since 1994, due to the lower thalweg profile near the Geyserville and Jimtown bridges.

Syar collected more robust and detailed data on thalweg elevations (using many more data points than those based on the cross-section surveys) from 2003 to 2007 using depth sounding equipment and GPS. This data indicates a trend toward an increase in thalweg elevations over the entire Lower Alexander Valley reach since mining last occurred in 2002. Figure 3.2-6 provides a plot of this more detailed thalweg data. Figure 3.2-6 shows that in the downstream half of the Lower Alexander Valley Reach, which includes the permitted mining area, thalweg elevations are slightly higher today than 1994. In the upper half of the reach around the Geyserville Bridge, it appears that thalweg elevations are lower today than in 1994, although this is based on a very few data points available in 1994 and there has been a rising trend since 2003.

Reference (Baseline) Elevations

The reference water surface elevation at low flow is another indicator of vertical channel stability. Reference water surface elevations have been recently tracked as part of the ARM monitoring program. Changes in low flow water surface elevation from year to year reflect potential changes in elevation across the low-flow channel width (defined by the water surface top width at low flow). If channel bed elevations are lowering then the water surface elevation would be correspondingly lower. If channel bed elevations are rising due to sediment deposition, then the low flow water surface elevation would also correspondingly rise. The low flow channel width always includes the thalweg, but also includes some of the channel bed area on either side of the thalweg, up to the elevation of the water surface. As such, the reference elevation integrates bed elevation changes over an area that is wider than just the individual point defined by the thalweg alone. Implicit in the reference elevation analysis is the assumption that if the low flow channel bed elevation has not changed from one year to the next, then the reference elevation will remain the same.

Reference water surface elevations were established using the cross-section survey information collected for the Annual Monitoring Program in the first year following approval of the 1994 ARM Plan, and in 1997 in the former DeWitt mining section (approximately RM 47.5 to RM 49.8) of the Lower Alexander Valley. Not all surveyed cross-sections in 1997 have a reference elevation because the water surface elevation was not always surveyed as part of the cross-section data collection. The 1997 reference water surface elevation was compared to the low-flow water surface elevation in 2008 using data from 22 cross-sections (ENTRIX, 2010). The average change in elevation since 1997 is small (i.e., a decrease of -0.15 feet), as shown in Table 3.2-3. This is well within the range of expected annual fluctuations for the Russian River and within the range of potential measurement error. The monitoring program considers that any change ±1 foot from the reference elevation is not significant. These results indicate that relative to the 1997 reference elevation, the former DeWitt permitted mining section of the Lower Alexander Valley reach has nearly recovered and has been vertically stable since 2003. It is useful to



Source: ENTRIX (2009)

Figure 3.2-6

Thalweg Elevation Lower Alexander Valley for 1994, 2003, 2006, 2007 Based on Depth Soundings and GPS.

Table 3.2-3
Lower Alexander Valley Reach Reference Elevation Change 2008

Cross-Section	1997 Reference WSEL	2008 WSEL	Change from 2007 (feet)
49+4224	176.8	176.46	-0.34
A-A	176.76	176.05	-0.71
B-B	176.25	175.83	-0.42
C-C	175.77	175.71	-0.06
D-D	174.18	174.54	0.36
E-E	173.92	173.34	-0.58
F-F	173.11	172.75	-0.36
G-G	172.74	171.4	-1.34
49+1800	172.14	171.70	-0.44
H-H	171.93	171.89	-0.04
I-I	170.45	170.94	0.49
J-J	169.76	169.67	-0.09
K-K	168.72	168.03	-0.69
L-L	165.64	N/A	N/A
M-M	163.75	163.71	-0.04
N-N	161.34	162.1	0.76
47+4800	161.18	161.85	0.67
O-O	161.16	161.79	0.63
P-P	161.08	161.03	-0.05
Q-Q	161	160.95	-0.05
R-R	159.59	158.74	-0.85
47+2800	158.92	158.74	-0.18
S-S	158.79	158.74	-0.05
Average Change			-0.15

Source: ENTRIX (2010)

understand that river forms and processes, including the elevation of the thalweg, are not static conditions, but rather reflect a condition referred to in the geomorphic literature as dynamic equilibrium. Dynamic equilibrium is the concept that over intermediate periods of time, (tens to hundreds of years), river conditions will fluctuate around some mean condition reflecting a balance in the constantly changing variables (flow and sediment) that drive fluvial processes (Mount, 1995).

Erosion

The Russian River in the study area follows a sinuous course between alternating gravel bars that are bounded by higher lying river terraces (former geomorphic flood plain surfaces) on either side. The meanders mostly follow the full available amplitude impinging directly on the right bank at the head of a meander then flow across the channel bed and impinge on the left bank for the next downstream meander bend. The width of the meander belt (channel between terraces) is roughly correlated with the occurrence of retreating (i.e., eroding) banks some of which have lost over 300 feet in the last several years. In the upper and middle sections of the reach with a relatively wide meander belt (up to 1,500 feet), meander curves have wide amplitude and bank erosion is more limited than downstream. In contrast, the meander belt in the lower portion of the reach is narrow and bounded by densely vegetated and armored banks. The reduced erosion in the lower project reach is also a result of the sediment transport dynamics during large floods where a large backwater area, formed by the downstream end-of-valley constriction below Jimtown Bridge; the backwater develops during large floods causing much of the bedload to deposit at Bars SD-4 and SD-5. Large deposits of sand and gravel in this backwater area are reflected by the large size of Bars SD-4 and SD-5 and the historic channel shifting that has occurred at this site. Overall, on a geologic timescale, the Alexander Valley is filling with sediments due to this valley configuration and downstream constriction.

Erosion is prevalent along the Russian River, particularly in the Lower Alexander. The highest erosive forces generally occur in high flow periods of winter storms; as bars have increased in height since 1994, the smaller floods (1–2 year events) have become far more effective in eroding banks. Erosion increases as the river’s hydraulic capacity to move sediment increases with higher flows. Lateral erosion occurs throughout the project reach, chiefly at the outer edges of the river along meander bends opposite gravel bars where hydraulic forces are directed toward the outer banks. There are at least 21 sections of riverbank experiencing moderate or high erosion rates that range in length from 500 to over 2,000 feet in length. Many of these erosive banks have been armored with rip rap, concrete rubble, car bodies or engineered structures to protect them. Most of the armored banks are located in the downstream half of the reach, from Bar S4 to the Jimtown Bridge. Annual monitoring of bank erosion is conducted under the 1994 ARM Plan requirements, along a 2.5 mile reach between RM 47.25 and 49.75 within the permitted gravel mining sections that were previously operated by DeWitt. That monitoring identified four sites with a total of approximately 2,700 linear feet of erosion. Two of the four sites have existing rip-rap revetments. The river’s erosive forces have been responsible for claiming many acres of mature riparian forest and some agricultural land, and undercutting of roadways, foundations, and bridge footings.

Flooding

The Russian River has a long history of flooding problems. Floods are the most frequent natural hazard experienced in Sonoma County and result in numerous local, state and federal disaster declarations (Sonoma County 2006). Damage resulting from flooding in Sonoma County has included:

- inundation of structures, causing water damage to structural elements and contents;
- erosion and scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features;
- impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters;
- accumulation of debris on bridge piers and in culverts, increasing loads on these features or cause overtopping or backwater effects;
- destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands; and
- release of sewage and hazardous or toxic materials as wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed.

In Sonoma County, floods usually occur between December and March, during the season of highest precipitation or during heavy rainfalls after prolonged dry periods. Flooding along the Russian River has been exacerbated by advancing urbanization and increased impervious surfaces causing more rapid runoff; past mining practices incised the riverbed and disconnected adjacent floodplains reducing floodplain storage capacity; construction of levees and land reclamation further confined the channel and increased in-channel flows; and accumulation of sediment on gravel bars reducing flood carrying capacity and increasing lateral bank erosion and bank failures. Damaging floods along the Russian River typically develop within 24 to 48 hours after the beginning of a storm and recede within 3 days after the end of the storm.

The earliest major flood recorded on the river occurred in 1862. This flood had an estimated discharge of 100,000 cfs, or what is now projected to be approximately a 100-year flood. The Russian River is considered to be at flood stage when it reaches a gauge height of 32 feet at the Guerneville Bridge. Table 3.2-4 shows the relationship between flood elevations and gauge height measured at the Guerneville Gauge located at the Guerneville Bridge. Floods reaching a gauge height of less than 34 feet at the Guerneville Bridge are a routine inconvenience that can happen more than once during a typical wet season. The largest flood in recent history occurred between February 14 and 18, 1986, when a peak discharge of 102,000 cfs was recorded and the flood reached a gauge height of 48.6 feet at Guerneville. This event was mapped by the Federal Emergency Management Agency as the 100-year flood. The 1995 flood also topped 48 feet and had a peak discharge of 93,900 cfs. The 1997 flood, while reaching a peak discharge of 82,100 cfs, is considered to be a moderate flood. The frequency of flooding events along the Russian River exceeded the flood stage at Guerneville 31 out of 50 years (1955 to 2006).

Table 3.2-4
Russian River Flood Level Elevations in Feet and Gauge Height

Level	Elevation in Feet	Equivalent Gauge Height
Base Level	8.67	0
Monitor Level	38.0	29.0
Flood Level	41.0	32.0
10 Year Flood Level	47.0	38.0
50 Year Flood Level	54.5	45.5
100 Year Flood Level	57.0	48.5
500 Year Flood Level	60.3	51.6

The most recent flooding event, the 2006 New Year's Flood occurred following a series of winter storms that entered California late in 2005. During December, Santa Rosa received a total of 17.59 inches of rain, with 4 inches falling on December 31 alone. This made it the second wettest December since record keeping began in 1888 (December 1955 was the wettest on record with 17.89 inches of rain recorded). The Russian River reached flood stage (32 feet) in Guerneville at 5:00 am on December 31 and continued to rise to a crest of 41.89 feet at about 4:30 am on New Year's Day. Continuing rainfall kept the river at flood stage until mid-day on January 3, 2006.

The flooding caused significant damage in the Guerneville area to property, businesses, and infrastructures such as roads, bridges, and buildings. Within the study area, flooding caused extensive damage to the Highway 128 Geyserville Bridge. Scour caused unrepairable damage to the bridge piers, and the bridge was replaced with a $22.5 million new structure with a wider, longer span Caltrans implemented further emergency repairs using riprap in late 2009 in response to ongoing erosion against the west bank just upstream of the bridge. If this erosion continues to progress it could outflank the bridge abutments, which would create substantial public safety and infrastructure concerns.

The standard for floodplain management in the United States is a flood having a 1% probability of occurring of in any given year (also known as the 100-year flood or FEMA base flood) It is important to note that the designation is statistical, rather than an actual measure. As it is a year-to-year risk, 100-year floods may occur more frequently than actually once every 100 years. Flood stage on the Russian River has nearly met the maximum historical flood crest on several occasions.

A river's capacity to contain flow volume is reduced by sediment stored in the river and the density of vegetation (i.e., woody trees and shrubs). River flood conveyance capacity decreases where there is a net accrual of sediments in the channel, and increases whenever there is a net loss of sediment in the channel (ENTRIX, 2007). Extraction of sediment from a river has the potential of increasing flood channel conveyance capacity beyond what it would be without mining. Flood conveyance capacity is reduced if the amount of sediment accrual exceeds the amount of extraction. As previously discussed, the lower Alexander Valley has displayed a general trend of aggradation, which has decreased flood conveyance capacity and potentially increases lateral migration and bank erosion. Loss of flood capacity in the channel also reduces sediment transport capacity and competence which increases coarse sediment deposition and in turn reduces flood capacity and sediment transport in other words a feedback loop that reinforces itself.

Groundwater

The Alexander Valley Groundwater Basin is approximately 47 square miles and is comprised of two sub basins, Alexander sub basin (number 1-54.01) to the south and the Cloverdale sub basin (1-54.02) to the north (DWR, 2004). The Alexander Valley Groundwater Basin occupies a structural depression in the Coast Ranges extending north of the San Francisco Bay. The valley floor is locally bounded by low hills consisting of unconsolidated water-yielding sediments. The basin boundary extends from Alder Glen Springs and Preston in the north to about 5 miles southeast of Jimtown.

Principal water bearing formations of the Alexander sub basin include Late Tertiary- to Quaternary-age volcanic rocks and continental sedimentary deposits that include the alluvium, Glen Ellen Formation, and the Sonoma Volcanics. The storage capacity for this basin is estimated at 762,000 acre-feet (af) with groundwater storage volume estimated at 547,000 af in the fall of 1980. A study from 1976 and 1999 of hydrographs from eight wells within the basin indicated no long-term change in water levels.

The principal source of groundwater in the Cloverdale area sub-basin is Holocene-age alluvium and, to a much lesser extent, the Jura-Cretaceous-age Franciscan Complex. The storage capacity for this basin is estimated at 71,000 af with groundwater storage volume estimated at 55,000 af in the fall of 1980. A study from 1961 and 1999 of hydrographs from eight wells within the basin indicated no long-term change in water levels.

The Holocene aged alluvium and river channel deposits in the Alexander Valley are hydraulically connected with the Russian River channel (Sonoma County, 1994). In general, the high transmissivity of the aquifer allows recharge in the winter when total rainfall is high. Under most conditions the aquifer feeds the river and the discharge in the river is “gaining” or increases downstream (ENTRIX, 2007); there are variations from this general trend from year-to-year and season-to-season. For example, in 1989 to 1990, the aquifer consistently supplied the river; in 1985 to1986 the aquifer fed the river except during August and September, when the aquifer was recharged by the river (Sonoma County, 1994).

There is no regular groundwater monitoring using wells in the lower Alexander Valley reach of the Russian River. The 1994 ARM Plan indicates that observation wells located throughout the Alexander Valley show large seasonal variation in groundwater elevations. As identified in the 1994 ARM Plan, the only process by which gravel mining might affect groundwater elevations is due to channel incision. If the channel scours and down-cuts into the bed, the groundwater table could be lowered. In coordination with the cross-section surveys of the ARM Plan monitoring, the reference water surface elevations and thalweg data described above provide a measure of vertical channel stability and is therefore an indirect measure of potential changes in groundwater elevations. The Annual Monitoring Program has tracked the changes in thalweg elevation since the beginning of the program, and has tracked the reference water surface elevation at several sites in the Lower Alexander Valley since 2004. As reported above, there have been small up-and-down fluctuations in the average thalweg and reference elevation in any given monitoring year. Overall these data indicate that the bed elevation in most of the Lower Alexander Valley has been reasonably stable, although there has been some down-cutting near the Geyserville Bridge relative to the very few available 1994 thalweg datum points. Thus it is unlikely that groundwater tables are lower due to vertical channel instability stemming from gravel mining. In fact, where the Annual Monitoring Program directly tracks well elevation data in the Middle Reach, it has documented an increase in groundwater elevations since 1994 (ENTRIX, 2010). The Annual Monitoring Program has stated that based on the ongoing annual tracking of channel bed stability, it appears unnecessary to continue monitoring wells in any of the three Russian River reaches. Continued monitoring of the channel bed and water surface elevations are sufficient to detect any potential impact from mining on groundwater (ENTRIX, 2009).

Water Quality

Surface Water Quality

Surface water quality in the Russian River is currently monitored in an on-going program conducted by the North Coast Regional Water Quality Control Board (RWQCB). The SCWA and other municipal water purveyors along the Russian River collect surface and groundwater quality data to ensure compliance with statewide surface water treatment rules. The water system operators monitor parameters such as conductivity, temperature, pH, and bacteria in the river and in their collection systems before chlorination in order to determine if the groundwater is under direct influence of the river.

The North Coast RWQCB listed the Russian River near Geyserville as an impaired water body for sedimentation/siltation. Sediment impacts in the Russian River tributaries prompted listing the entire Russian River watershed for sediment total maximum daily load (TMDL). The river is scheduled for TMDL water quality objectives development in 2011. The federal Clean Water Act defines “water quality standards” to include both “designated uses” (i.e., beneficial uses) and “water quality criteria” (i.e., water quality objectives). Thus, the designated beneficial uses listed in Table 3.2-5 are the California water quality standards for waters of the Russian River Hydrologic Unit (HU), Geyserville Hydrologic Subarea. The water quality of the Russian River

Table 3.2-5
Designated Beneficial Uses for the Russian River, Geyserville Subarea

Beneficial Use	Description
Agricultural Supply	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Municipal and Domestic Supply	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Industrial Service Supply	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
Industrial Process Supply	Uses of water for industrial activities that depend primarily on water quality.
Groundwater Recharge	Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
Freshwater Replenishment	Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).
Hydropower Generation	Uses of water for hydropower generation.
Warm Freshwater Habitat	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Rare, Threatened, or Endangered Species	Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.
Cold Freshwater Habitat	Supports cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
Commercial and Sport Fishing	Used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.
Migration of Aquatic Organisms	Supports habitats necessary for migration, acclimatization between fresh and salt water, or temporary activities by aquatic organisms, such as anadromous fish.
Aquaculture	Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.
Navigation	Used for shipping, travel, or other transportation by private, military, or commercial vessels.
Water Contact Recreation	Used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to: swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.
Non-contact Water Recreation	Used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
Spawning, Reproduction, and Development	Supports high quality aquatic habitat necessary for reproduction and early development of fish and wildlife.
Wildlife Habitat	Supports wildlife habitats including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

Source: North Coast RWQCB 2007

meets the North Coast RWQCB's standards for the river's beneficial uses described in the Water Quality Control Plan for the North Coast Region (Basin Plan).

The potential sources of sedimentation and siltation within the Russian River are: agriculture (non-irrigated and irrigated crop production, specialty crop production, grazing, etc.), construction/land development, surface runoff, resource extraction, channelization, bridge construction, removal of riparian vegetation, stream bed modification, channel erosion, and miscellaneous non-point sources. A recently completed Biological Opinion (BO) prepared by NOAA NMFS for the Sonoma County Water Agency (SCWA) cites sluicing of fine sediments from Coyote Reservoir in Mendocino County as a potentially significant source of fine sediments and turbidity in the main stem river during times of salmonid migration; the BO calls for installation of monitoring equipment to detect the discharges.

Water temperature is also listed as a potential source of impairment. The beneficial use of the Russian River most sensitive to temperature is habitat for coho salmon, Chinook salmon, and steelhead trout, which are listed as endangered and threatened species under the federal Endangered Species Act. Temperature data collected during the period of 1997–2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries. Potential sources of temperature are: flow regulation/modification, habitat modification, and removal of riparian vegetation.

Typical water quality concerns due to instream mining include discharge of loose decomposed rock and soil stockpiles, soil discharge from disturbed slopes, and fuel and chemical discharges from vehicles, equipment storage and maintenance areas. Loose or unstable soil after skimming slopes can contribute silt and suspended solids to stormwater and to the river at higher flows. Vehicles and equipment can contribute diesel fuel, gasoline, motor oil, lubricants, hydraulic fluid, anti-freeze and other similar pollutants to stormwater runoff. Syar has developed and used plans to address accidental releases of hazardous materials from instream mining; this is further addressed in Section 3.11, "Hazards and Hazardous Materials".

Groundwater Quality

The DWR elevated water quality of groundwater in the Russian River Basin through compilation of chemical analyses from wells in the Alexander Valley and Healdsburg areas (Sonoma County, 1994). Data were collected for dissolved sodium, the adjusted sodium, the adjusted sodium adsorption ratio, dissolved chloride, total dissolved solids, electric conductivity, dissolved nitrates, dissolved boron, dissolved hardness, and pH. Relatively low levels of these constituents were measured with the exception of boron in some of the deep wells sampled in the lower aquifer below a clay layer.

Groundwater monitoring data have been collected in the Alexander Valley since 1950. Water quality of this Alexander sub-basin is generally characterized as moderately hard to hard bicarbonate. Data suggest a progressive change in water chemistry over time. Samples from the southern part of the valley show a trend toward higher ionic concentrations and increasing concentrations of particular constituents such as sulfate. These water-quality changes may be attributed to natural processes, such as cation exchange, or to anthropogenic impacts, such as changes in land use or irrigation practices, or as a result of declining water levels (USGS, 2006).

B. Regulatory Framework

FEDERAL REGULATIONS

Clean Water Act

The Clean Water Act (CWA), as amended by the Water Quality Act of 1987, is the Federal legislation governing water quality at a Federal level. The objective of the act is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA prevents pollution through the regulation of discharges into waters of the United States, including a range of potential point and nonpoint sources of water-transported pollutants, and the discharge of fill into waters, such as wetlands and intermittent stream channels. The mining permit is subject to the Clean Water Act which is administered by the Army Corps of Engineers through their Section 404 permit process

STATE REGULATIONS

California Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act of 1975 (SMARA) addresses the need for mineral resources while preventing or minimizing the negative public health, property, and environmental impacts of surface mining. As related to hydrologic and water quality issues, the process of reclamation includes maintaining water quality and minimizing flooding and erosion damage to wildlife and aquatic habitats caused by surface mining. The requirements of the Act apply to any surface mining operations that disturb more than one acre or remove more than 1,000 cubic yards of material. Therefore, the proposed instream mining is subject to the requirements of SMARA. Under SMARA, a local agency, upon adoption of a mining ordinance consistent with the Act, becomes the mining authority and lead agency for issuance of surface mining permits and enforcement of SMARA requirements. The County of Sonoma adopted a Surface Mining and Reclamation Ordinance (SMARO) in 1981 and updated the ordinance in 1994 to implement the Aggregate Resources Management Plan as discussed below.

Porter Cologne Water Quality Control Act

Water quality regulation within California is based upon the State's Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code). The State Water Resources Control Board (SWRCB) administers water rights, water pollution control, and water quality functions throughout the state, while the Regional Water Quality Control Boards (RWQCBs) conduct planning, permitting, and enforcement activities.

North Coast Regional Water Quality Control Board

The North Coast RWQCB has primary responsibility for the maintenance of water quality in the study area and Russian River watershed. The first comprehensive *Water Quality Plan for the North Coast Region* (Basin Plan) was adopted by the RWQCB in 1975. Since that time, the RWQCB has updated and amended the Basin Plan several times. The RWQCB adopted the most current version of the Basin Plan in 2007. The Basin Plan is used by the RWQCB as a regulatory tool and by other agencies for permitting and resource management.

The RWQCB has the responsibility of protecting the beneficial uses of surface waters from pollution and nuisance that may be caused by waste dischargers. The goal of the Basin Plan is to define a program of actions that are designed to preserve and enhance water quality and to protect the beneficial uses of waters in the North Coast. Beneficial uses are identified in regional waters in order to assess which uses need to be protected from degraded water quality. From a water quality management standpoint, the most sensitive beneficial uses are municipal, domestic, and industrial water supply, recreation, and uses associated with the maintenance of resident and anadromous fisheries. The Basin Plan allows a 20% maximum increase in turbidity, as measured at a downstream monitoring point.

The 1987 Federal Water Pollution Control Act amendments require regulation of stormwater under the National Pollutant Discharge Elimination System (NPDES) permit program. The SWRCB has issued a general NPDES permit for stormwater discharges associated with industrial and construction activities statewide, which is enforced in northern Sonoma County by the North Coast RWQCB. The general permit requires development and implementation of Storm Water Pollution Prevention Plans (SWPPP) emphasizing Best Management Practices (BMPs) to control both erosion and sedimentation. The SWPPP has two major objectives: to help identify the sources of siltation and other pollutants that affect the quality of stormwater discharge and to describe and ensure implementation of practices to reduce siltation and other pollutants in stormwater discharges. Since instream mining occurs within river channel, stormwater is not a significant concern. However, measures should be taken to minimize flux of sand and silt into the river as a result of skimming operations.

LOCAL REGULATORY ISSUES

Sonoma County General Plan

The Resource Conservation Element in the Sonoma County General Plan provides for the conservation of natural resources including water, forests, soils, rivers, harbors, fisheries, wildlife, minerals, and other natural resources. Regulations applicable to Hydrology and Water Quality are as follows:

Goal RC-3 Conserve, enhance, and manage water resources, protect their quality, and assure an adequate long term supply of water for domestic, fishing, industrial and agricultural use.

Objective RC-3.1: Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.

Objective RC-3.2: Provide development standards in recharge areas to maintain groundwater supplies.

Objective RC-3.3: Preserve and enhance the quality of surface and groundwater resources.

Policy RC-3a: Grading, filling and construction should not substantially reduce or divert any stream flow that would affect groundwater recharge.

Policy RC-3b: Require groundwater monitoring programs for all large scale commercial and industrial uses using wells.

Policy RC-3c: Continue to encourage research on and monitoring of local groundwater, watersheds, streams, and aquifer recharge areas in order to determine their water supply value.

Sonoma County Aggregate Resources Management Plan (ARM Plan)

The major objectives of the 1994 ARM Plan for instream mining are to:

- “Maintain a balance between aggradation and degradation that reflects the natural recharge of aggregate. This will be accomplished by managing production to remove only the net accumulation of aggregate within the channel and by regulating the location, extent, depth, and frequency of gravel extraction.
- Provide high-quality aggregate materials.
- Maintain or increase flood flow capacity of stream channels and reduce the potential for bank erosion” (ARM Plan p. 7-11).

The Plan establishes specific adaptive management policies and methods that identify where mining can occur, and how the mining areas would be surveyed and measured to ensure no long term degradation would occur at any mining site, including upstream and downstream locations. The plan further established the Russian River Mitigation Fund for restoration of any lateral bank erosion that occurred upstream or downstream of mining sites.

The ARM Plan evaluated several methods for managing aggregate resources including the establishment of a sediment budget. However, the ARM Plan rejected the use of sediment budgets to limit instream mining activities due to the inherent difficulty in accurately estimating the sediment yield and due to substantial natural fluctuations in the annual sediment recharge. Instead the ARM Plan relies on a “redline method,” which requires the establishment of baseline elevations below which mining cannot occur in the mining reaches. Mining in subsequent years can only occur when there has been sufficient recharge above the baseline elevations. Annual monitoring of the Russian River has shown that the ARM Plan has been very effective at limiting mining to a sustainable yield of available recharge and minimizing the potential for down cutting of the riverbed from mining activities. However, the County’s ARM Plan standards conflict with the federal Guidelines for Sediment Removal from Salmonid Habitat (NOAA, 2004).

Sonoma County Mining and Reclamation Ordinance (SMARO)

The Sonoma County Mining and Reclamation Ordinance lists criteria that need to be met for surface and instream mining operations. Among the criteria are:

- Incorporation of best management practices (BMPs) to minimize storm water ponding, alterations to the natural drainage system, and siltation of adjacent or downstream watercourses.
- Obtaining appropriate permits from regulatory agencies as applicable
- Protection of water quality by meeting all applicable water quality standards of the Regional Water Quality Control Board and any other agency with authority for water discharges.
- Prevention of erosion and sedimentation by incorporating approved erosion control and streambank protection measures.
- Assumption of responsibility for the erosion of lands adjacent to the project.

- A preparation of an erosion and sediment control plan describing erosion control and streambank protection measures to be sized and designed by a civil engineer in accordance with standards set forth in the most current “flood control design criteria” manual published by the Sonoma County water agency and other responsible agencies.

- The compliance with the applicable requirements of the Regional Water Quality Control Board and the CDFG for the installation, maintenance and removal of all stream crossings.

- The monitoring of groundwater levels as specified in the ARM plan and/or funding of the collection and analysis of such data through the Russian River monitoring program.

The principal method for managing in-stream extraction to remove only the net accumulation of aggregate is the establishment of a minimum baseline elevation below which mining cannot occur, per the County’s Surface Mining and Reclamation Ordinance (SMARO) Section 26A-09-020 (f) (4). Mining is only permitted below the widest point or apex (or the lower half where there is no apex) with a minimum 15-foot side bar buffer. Bar skimming is allowed above the minimum baseline elevation established at a 2% cross-slope from the low flow water surface. Extraction in subsequent years on bars previously mined is only allowed when aggradation has occurred above the minimum baseline elevation, and certain other conditions have been met, per SMARO Section 26A-09-020 (g).

C. Potential Impacts and Mitigation

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

A project would have a significant impact if it meets any of the following criteria:

- Violates any water quality standards or waste discharge requirements;
- Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level (e.g., the production rate of pre-existing nearby wells or springs would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff;
- Otherwise substantially degrades water quality;
- Places housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood delineation map;
- Places within a 100-year flood hazard area structures which would impede or redirect flood flows; or

- Exposes people or structures to significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Inundation by seiche, tsunami, or mudflow.

Program Impacts

The proposed mining plan requires an amendment to the 1994 ARM Plan and related mining ordinance standards to allow a different method of mining. The proposed mining method is based on the NOAA/NMFS Sediment Removal Guidelines. The ARM Plan amendment includes new objectives for the lower Alexander Valley to provide greater protection and enhancement of aquatic habitat. One of the key purposes of the proposed amended ARM Plan and related mining ordinance amendment is to manage mining so that it would not interfere with the geomorphic processes that maintain high value aquatic habitat for endangered fish while not altering the geomorphic characteristics of the river.

This subsection discloses, analyzes, and mitigates the potential effects of the proposed changes to the ARM Plan and related mining ordinance standards. Instream mining activities can directly change river geomorphology by altering the shape, elevation and slope of bars and reducing the coarse sediment supply (by skimming bars), and indirectly by altering river hydraulics (e.g., depth and velocity of flow) across the channel width in the mining area. These types of changes can affect sediment transport characteristics and ultimately the channel forming processes and the morphology of the channel.

The Hydrology section of the 1994 ARM Plan PEIR (Section 8.3) evaluated potential impacts that could result from bar skimming in the absence of standards and regulations. Mitigations recommended in the 1994 PEIR were adopted as operating standards (section 7.5.2) and restrictions in the management plan. The impact analysis determined that instream mining operations could lower the channel thalweg elevation, resulting in incision, over-steepening of streambanks and increased bank erosion that would affect channel stability and potentially impact water quality by increasing fine sediment loads in the Russian River and its tributaries. The ARM Plan recognized that there could be secondary impacts related to channel incision and bank erosion including loss of streamside agricultural soils, increased sedimentation, and loss of riparian and fishery habitat. Instream operations could also alter the natural geomorphic characteristics of the channel, creating a wide, shallow low flow channel with elevated water temperatures, reduction in pools and riffles, and generally simplifying channel complexity needed for fish habitat. The PEIR included mitigation measures to reduce potential effects, including limiting extraction to more closely match the amount of recharge by implementing a minimum baseline elevation below which mining cannot occur; limiting mining to the lower half of the bar or downstream of the apex; establishing buffers around the bar perimeter and other operating standards; requiring participation in the Russian River Gravel Mitigation Program; and installation of erosion control. Monitoring data collected since adoption of the ARM indicate that the policies and standards in the ARM Plan and mining ordinance have been effective at preventing channel incision and limiting bank erosion, but may not have been as effective at maintaining aquatic habitat.

Changes to the ARM Plan policies are intended to provide for an Adaptive Management Strategy (AMS) that would enable PRMD to require adjustments to the annual mining plans to respond to changes in channel morphology and enable incorporation of enhancement features into the project to restore aquatic functions and habitat values. The AMS will require careful evaluation of changing river conditions in consultation with the County's Scientific Review Consultants and resource agencies.

A key strategy of Sonoma County and the resource agencies has been to manage mining so as not to interfere with the geomorphic processes that provide aquatic habitats, while also maintaining flood capacity and protecting groundwater levels. This section discusses how each of the proposed changes to ARM Plan mining methods and standards may affect geomorphic processes and aquatic habitat. Mitigation measures to prevent substantial changes in channel geomorphology include modifications to the proposed standards and the establishment of improved monitoring and performance criteria to be incorporated into the ARM Plan and related mining ordinance amendments as well as the conditions of approval for the mining permit.

Impact of Revised Baseline Elevations and Slope

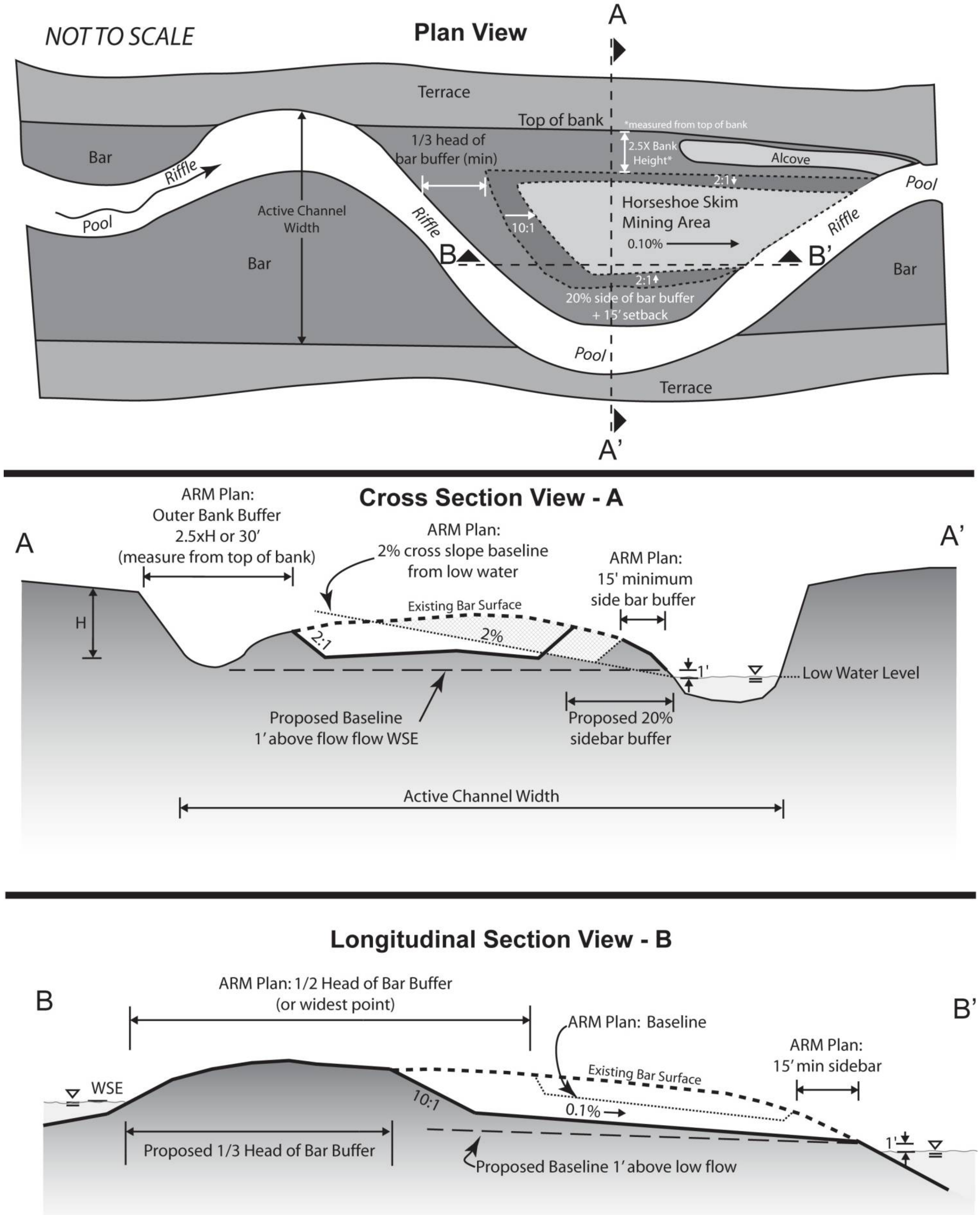
***Impact 3.2-1*: A recent proposal from the Sonoma County Water Agency to the State Water Resources Control Board to reduce the flow regime for the Russian River would cause lower low flow channel elevations to be used in establishing the baseline elevations, potentially causing lowering of the channel below previous baseline levels.**

Minimum baseline elevations control the maximum depth of aggregate removal on bars. Baseline elevations are keyed to the low flow water surface elevation. Recent plans that may reduce the magnitude of summer flows on the Russian River would result in the establishment of lower baseline elevations, potentially increasing the depth of mining and causing changes in the channel morphology including channel incision and widening of the low flow channel.

The ARM Plan and SMARO limits extraction to the baseline elevation established prior to the first year of mining in any given reach (see state regulations above in Section B, “Regulatory Framework”). The ARM Plan currently establishes the baseline elevations at the low flow water surface elevation and extending at a 2% slope across the bar. Based on these standards, mining is not allowed below the 2% cross-slope grade line that extends from the baseline elevation, thereby limiting the depth and amount of gravel extraction on the bar. Existing baseline elevations were established in the first year of mining (1997) for the previously mined DeWitt reach of the Lower Alexander Valley.

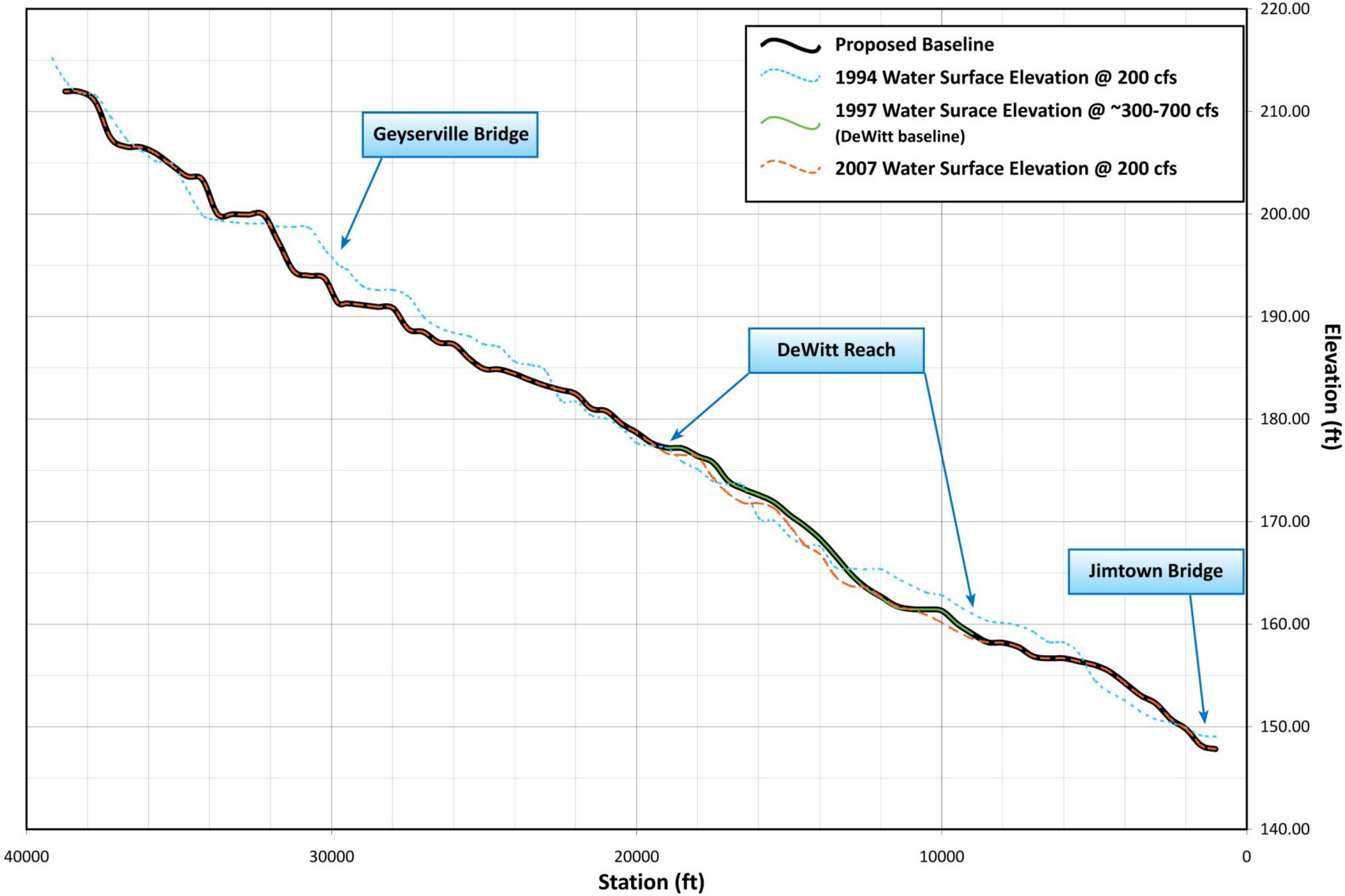
Syar proposes establishing a new baseline elevation at 1 foot above the low flow water surface elevation with a longitudinal downstream gradient (from the upstream mining edge toward the head of the bar downstream to the tail of the bar) equivalent to the river water surface elevation slope at low flow. This would conflict with the 2% slope requirement across the bar and requires an amendment to the ARM Plan and SMARO to allow a new baseline elevation to be established at 1-foot above the low flow surface water elevation for all bars in the lower Alexander Valley mining reach. The change in minimum baseline elevation would be offset by larger side bar buffers, as recommended by NMFS. The proposed changes in ARM Plan standards as proposed by Syar are illustrated in Figure 3.2-7.

The proposed change would eliminate the required 2% slope, and could allow for deeper mining on parts of the bar. The proposed change would not disrupt geomorphic processes or cause any significant change in channel morphology because of the added provision that the skimmed floor elevation shall be maintained one-foot above the baseline elevation that was established during the first year of mining after ARM Plan adoption. Baseline elevations were established for the former DeWitt bars SD-4 and SD-5 located 3 miles upstream of the Jimtown Bridge, but no other baseline elevations have ever been established in the Lower Alexander Valley. Using available data, Figure 3.2-8 shows the 1994 and 1997 thalweg elevations, and the 1994, 1997 (existing baseline), and 2007 water surface elevations at low flow. The thalweg and water surface elevation plots are derived from past DTM data collected by Syar and for the annual ARM monitoring program.



Source: Syar (2010)
Note: please see Figure 1-6 for cross sections

Figure 3.2-7
Proposed Change to ARM Plan Standards for Lower Alexander Valley Reach



Source: Syar (2010)

Figure 3.2-8

Longitudinal Profile of 1994 and 2007 Thalweg with 1994, 1997, and 2007 Water Surface Elevations and Baseline Elevation to Establish Bar Skim Floor

The project will require establishment of baseline elevations for the rest of the mining reach, which, according to the 1994 ARM Plan, would be set at the current low flow elevation. Establishing new low flow channel elevations upstream and downstream of the previously mined section may not be in vertical alignment with the original baseline elevation established in 1997. In addition, the flow regime of the Russian River may be changed from an estimated 200 cfs summer low flow level to less than 50 cfs during periods of drought. This would lower the elevation of a new baseline relative to the existing 1997 baseline, allowing mining to a deeper elevation than was originally envisioned by the ARM Plan. It would allow a greater quantity of aggregate to be mined from each bar, potentially altering the balance between aggradation and degradation of the channel bar and thalweg, possibly leading to channel incision. This impact is considered potentially significant.

***Mitigation Measure* 3.2-1** Establish minimum baseline elevations for the Lower Alexander Valley mining reach at 1-foot above the higher of either the 1997 or 2007 water surface elevations adjacent to each bar as shown in Figure 3.2-8. Mining shall not be allowed below the minimum baseline elevation (1-foot above the higher of 1997 or 2007 water surface elevations). Mining shall be limited to bars that have accumulated sediment above the reference baseline elevation established in the first year prior to mining. If the water surface elevation is higher than the baseline elevation during implementation of mining activities, mining shall be limited to 1-foot above the water surface elevation at that time. These standards shall be incorporated into the ARM Plan and SMARO Amendments for the Lower Alexander Valley reach, as well as, in the project conditions of approval.

Impact Significance After Mitigation

Mitigation Measure 3.2-1 would reduce potential impacts associated with the establishment of new baseline elevations to a less than significant level.

Impact of Revised Head of Bar Buffer

The project calls for allowing mining up to two-thirds of a bar length and retaining an un-mined area at the bar head that is a minimum of one-third the length of the bar. The 1994 ARM Plan standards require retention of the upper half of the bar (defined in the ARM Plan as from head of bar at low flow downstream to the widest point of the bar). But the ARM Plan allows for modifications or waiver of the requirement if a detailed study is performed, suggesting that this standard may not always be the best management approach and adjacent streambanks. Current ARM Plan standards require a 2:1 slope within the mining area. The Syar mining proposal would modify these slopes to a gentler 10:1 grade at the head of the bar.

***Impact 3.2-2* The proposed ARM Plan amendment to retain 1/3 of the bar head as a buffer may not in some circumstances provide sufficient buffer area or height to prevent cutting through the bar head, potentially creating a high flow chute channel, disassociation of the bar from the bank or scour of the bar which can result in a braided channel form, alter the course of the main channel, disrupt the processes that maintain the pools and riffles, increase bank erosion and expose people and structures to increased risks from flooding.**

While the prescribed standards of the ARM Plan have proven effective at maintaining channel stability and bar forms, there have been a few instances where the head of bars have been eroded when mining occurred in the upper half, resulting in the formation of a high flow chute channel on the inside of the bar, increasing bank erosion, and potentially altering the course of the main channel. This impact is potentially significant.

Where the highest bar elevation lies within the lower half of the bar in an area that could be mined, there is a greater risk for the river to overtop the bar head because of the relative lower elevation of the retained bar head between the river and the excavated mining area. During high magnitude flow events, the bar head can be eroded, potentially resulting in cut off of the meander, disruption of the processes that maintain aquatic habitat, and an increase in lateral bank erosion on the inside of the bar, exposing people and structures to risks of flooding. This situation occurred in 2002 in the Upper Alexander Valley at the Louisiana Pacific (LP) bar near Cloverdale, where only 1/3 of the bar head was retained as a buffer. The head of the bar eroded and a high flow chute channel was created on the inside of the bar. The channel threatened to erode the right bank and thereby dissect the bar, potentially causing a channel avulsion which would create a simpler straighter flow path around a braided island. This event simplified the channel hydraulics and disrupted the pool and riffle sequence on the outside of the bar.

Several factors affecting geomorphic conditions may have contributed to the LP bar head erosion, including a too-small bar head buffer, side bar buffers that were too high and wide, and the fact that the next upstream bar was also mined. This example indicates that changes to the ARM Plan standards can have significant impacts. The proposed change in ARM Plan standards to allow mining in the upper half of the bar could result in similar impacts.

Another example of insufficient bar head buffer is Bar 2 in the Middle Reach located downstream of the Alexander Valley and Digger Bend near Healdsburg. This bar was mined and buffers retained using a 6-foot vertical offset from low water at the upstream end of the bar. Given the high energy setting, the head of bar buffer was overtopped, allowing a high flow channel to develop along the inner edge of the bar, which caused some erosion of the streambank at the inner edge. The low flow channel and adjacent riffles and pools were not affected, nor did the thalweg move from its pre-mining position. Subsequent flows in 2003 though 2006 filled the overflow channel and the bar aggraded 6–8 feet. The bar was mined in 2007 using a larger and higher head of bar buffer, which has prevented a new high flow channel from forming. This example shows that the river has some resilience given its high bedload supply, and the system’s dynamic equilibrium will recover over time. The lesson at Bar 2 is that a larger head of bar is needed at such locations (high energy at the mouth of the Digger Bend Canyon). Monitoring of skimmed bars in the Middle Reach show periodic breach of narrow upstream head of bar buffers, but a rapid increase in sediment deposition occurred and refilled the mined area.

NOAA (2004) Sediment Removal Guidelines recommend that the bar form should be preserved below the height equivalent to the dominant discharge to preserve the geomorphic processes that form and maintain aquatic habitat. The dominant discharge is estimated to be approximately 11,000 cfs or about a 1.2-year flow, which corresponds to approximately 8-feet above the low flow water surface elevation (see discussion of climate and hydrology above in Section A, “Setting”).

The proposed change to baseline elevations to eliminate the 2% cross slope would allow deeper excavations in the mining area just downstream of the bar head. This can cause greater erosion of the bar head by “head-cutting” (the process by which the nickpoint created by the skim floor migrates by erosion in the upstream direction through the bar) when flows overtop the bar head. Current ARM Plan standards require a 2:1 slope in the mining area, which was appropriate for the bar skimming methods at a 2% cross slope. However, a more gradual slope within the mining site between the skim floor elevation up to the bar head elevation should be required for these deeper excavations to prevent head-cutting and erosion of the bar head buffer. Syar has proposed a more gentle 10:1 slope aligned along the longitudinal axis of the bar (parallel to the flow direction) between the bar head and the skim floor (see Figure 3.2-7) which should be sufficient to prevent head cutting.

Mitigation Measure 3.2-2 Mining shall only be allowed downstream of the horizontal apex of the bar (or the lower half of the bar where no apex is apparent) with an exception to allow mining in the upper half of the bar only when the head of bar buffer is at least 8-feet above the water surface elevation measured from the upstream riffle crest at approximately 200 cfs flow, but in no case shall the head of bar buffer be less than one-third of the bar length. Mining will not be allowed in the upper half of the bar if the head of bar buffer is less than 8-feet above the water surface elevation, unless necessary to protect public infrastructure. Cut slopes shall be maintained at 10:1 from the bar head to the skim floor surface and shall be sloped along the skim floor surface at the same gradient as the low-flow river channel to drain to the downstream outlet at the bar tail. This standard shall be incorporated into the ARM Plan and SMARO Amendments for the Lower Alexander Valley Reach, as well as, the project conditions of approval.

Impact Significance After Mitigation

Mitigation Measure 3.2-2 would reduce the impact associated with allowing mining in the upper half of the bar to a less than significant level. Preserving a substantial bar head elevation of at least the height of the dominant discharge would maintain the geomorphology of the channel and reduce the risk of erosion of the bar head, consistent with federal Guidelines for Sediment Removal prepared by NOAA (2004). In addition, requiring a 10:1 slope between the skim floor and the bar head would reduce the potential of headcut erosion through the bar head. Sloping the skim floor at the gradient of the low flow channel would provide drainage toward the tail of the bar and reduce the potential for fish stranding (addressed in Section 3.4, "Fisheries Resources").

Impact of Revised Side Bar Buffer

The current ARM Plan standards require 15 foot wide side bar buffers, but allow those buffers to be increased under consultation with the resource agencies. Typical buffers for mining permits have ranged from 15 feet to 50 feet wide, depending upon the amount of existing riparian vegetation. In one case, a 100-foot side bar buffer was required for the LP bar in the upper Alexander Valley to protect extensive vegetation along the low flow channel edge on the outside perimeter of the bar. The side bar buffers proposed by Syar are 20% of the active channel width (active channel is the combined total width of the low flow wetted channel plus the width of the gravel bar). The side bar buffers would range from 150–180 feet wide based on the 20% criteria. There are no current ARM Plan standards for the height of side bar buffers. Excessively high and wide well-vegetated side bar buffers may have played a role in the LP bar head erosion, and increase the risk of splitting the main channel flow around the side bar, creating a braided channel form.

Impact 3.2-3 **Side Bar Buffers**: **The proposed ARM Plan change in width of side bar buffers from 15 feet to 20% of the active channel width could potentially cause channel braiding, induce erosion of the bar head or cause other changes in the bar form and increase lateral bank erosion.**

Wide, tall, and well-vegetated side bar buffers, especially in relation to a relatively smaller bar head buffer (1/3 the bar length), could cause the channel to avulse and cut through the bar head, particularly if the bar head is at a lower elevation than the side bar buffers. The tall, wide and well-vegetated buffer on the LP bar may have played a role in erosion of the bar head there, and the ongoing accretion of sediments on the side bar buffer could cause the channel to braid around the side bar buffer, isolating it as an island and potentially increasing erosion of the bar itself. The experience at the LP site shows that the size of the side bar buffers needs to be better related to the elevation and size of the bar head buffers. The 20% buffer width does not have any relation to the bar height or form, other than requiring larger buffers on the wider bars. The 20% side bar buffers would be typically 150–200 feet wide, which is substantial. However, the typical 15-foot setback contained in the current ARM Plan is not sufficient to protect the outer perimeter of the bar from being eroded or breached or allow flows into the mined portion of the bar during even relatively moderate flow events. As currently provided by the ARM Plan, cut slopes along the side bar buffers shall be a minimum of 2:1 in the mining area.

NOAA's (2004) Sediment Removal Guidelines suggest a more appropriate methodology for establishing the height of side bar buffers so they retain the topographic attributes of the bar up to at least the elevation of the dominant discharge, which is estimated at approximately 8-feet above the water surface elevation at 200 cfs. The 15 foot minimum width of the side bar buffers required by the current ARM Plan should be increased to minimize the potential for their erosion, but the buffer width should not be so great as to contribute to braiding. This impact is potentially significant.

Mitigation Measures 3.2-3 Minimum side bar buffers shall be established at 15% of the maximum width of the active channel (widest point of the bar and low flow channel) but in no case should be less than 50 feet wide. The side bar buffer elevations should be no higher than 8 feet above the low water surface if mining in the upper half of the bar (upstream of the apex). If side bar buffer heights exceed the head of bar buffer height, they shall be graded to match the maximum head of bar buffer elevation, retaining a minimum 50-foot undisturbed buffer along the edge of bar. Buffers shall taper down in width at the downstream end of the bar to allow for drainage of the mining site. Under the Adaptive Management Strategy, the final height and width of the side buffers may be adjusted by the County, in consultation with the SRC and agencies, but in no case shall be less than 50 feet wide. These standards shall be incorporated into the ARM Plan and SMARO Amendments for the lower Alexander Valley Reach, as well as, the project conditions of approval.

Impact Significance After Mitigation

Mitigation Measure 3.2-3 would reduce the impact of large side bar buffers on channel geomorphology to a less than significant level. By matching the side bar buffer to the height of the head of bar buffer, the potential for braiding and bank erosion is reduced, while the geomorphic processes occurring at moderate flows are maintained. By maintaining a minimum 50 foot side bar buffer width, the potential for erosion and loss of the buffer is substantially reduced. The increased side bar buffers are consistent with federal Guidelines for Sediment Removal prepared by NOAA-NMFS.

Impact of Outer Bank Buffer

Impact 3.2-4 **The proposed outer bank buffers of 2.5 times the height of the bank or 30-feet, whichever is greater, measured from the top of the outer bank could allow mining at the toe of the outer bank slope and/or removal of existing riparian vegetation that serves to stabilize the slope, increasing potential for bank erosion or failure. This impact is potentially significant.**

The outer bank buffers, as defined in the existing ARM Plan and mining ordinance, are measured from the top of the outer bank, which is appropriate for a setback that is outside the channel. However, when measuring a setback located within the channel, it is more appropriate to measure the setback from the toe of the bank slope or outside the dripline of any existing riparian vegetation that serves to protect the toe of the slope.

Mitigation Measure:

3.2-4 An undisturbed buffer area shall be established along the outer bank equivalent to 2.5 times the height of the bank or 30-feet whichever is greater measured from the toe of the outermost bank. The buffer shall be widened as necessary to include the dripline of existing riparian vegetation towards the low flow channel. An exception to the outer bank buffer can be made for enhancement components, such as channel alcoves, oxbows, inset floodplain benches or terraces, placement of large woody debris or bioengineered bank stabilization features. This standard shall be incorporated into the ARM Plan and SMARO Amendments, as well as, the project conditions of approval.

Impact Significance After Mitigation

Mitigation Measure 3.2-4 would reduce the potential for encroachment on the outer banks to a less than significant level.

Impact of Adaptive Management Strategy

Impact 3.2-5 The impact of the Adaptive Management Strategy is considered potentially beneficial; however the effectiveness of the strategy relies upon the quality of the data collected to evaluate changing river conditions. In the absence of quality data, adjustments to mining methods and enhancement components could disrupt the geomorphic processes that form aquatic habitat and channel morphology, potentially causing shifts in the meanders, channel lowering and increased erosion.

The Adaptive Management Strategy is designed to account for year-to-year changes in the river by ensuring that mining is reviewed on an annual basis. The AMS is considered potentially beneficial, but in the absence of quality monitoring data, it could be difficult to identify channel geomorphic adjustments in response to mining activities, and to revise mining methods and enhancement components to address adverse channel changes. This impact is potentially significant.

The current monitoring program for the Russian River substantially relies on establishing cross-sections at approximately 400-foot intervals throughout the mining reach with limited data collection in non-mining areas. Conclusions regarding the volume of sediment accrual or scour, and vertical channel stability (e.g., thalweg down-cutting) drawn from cross-section survey data has substantial technical limitations associated with the methodology and may not provide accurate information (ENTRIX, 2007). The limitations are related to the fact that sediment volume changes are interpolated over long distances between cross-sections.[4] Importantly, by

[4] The net change in storage volume between two adjacent cross-sections are calculated by multiplying the average change in cross-sectional area of the two cross-sections by the distance between the cross-sections. The annual gravel recharge is calculated by summing all of the individual changes in gravel volume between cross-sections and adding the annual in-channel gravel extraction amounts. The calculation method for net change in sediment volume causes cross-sections with longer distances between them to have a much greater proportional influence on the calculated results than cross-sections with shorter distances between them. A small cross-sectional area change distributed between two widely separated cross-sections will have a relatively greater effect on the total volume of change in gravel storage, because this relatively small change is propagated over a very long distance.

interpolating over long channel distances the cross-section is likely not truly representative of sediment accrual rates, and vertical channel stability (thalweg elevation) over much of the channel.

Current technologies derived from aerial photography, such as the Digital Terrain Model (DTM), provide far more accurate data for determining changes in the bar elevation and topography than cross-sections and thus the amount of change in sediment storage over a bar from year to year. A DTM can provide hundreds of elevation data points over a bar surface. Annual cross-section survey data for monitoring purposes will no longer be required, with the exception of the long-term cross-section data set from the Lower Alexander Valley, as the DTM based data can be used to assess bar elevation and sediment storage changes. Since inception of the 1994 ARM Plan, aerial photography of the Upper and Lower Alexander Valley and the Middle Reach has been flown and used as a valuable tool for evaluating river conditions throughout the mining reaches. Aerial photography will continue to be useful and should be provided for the Lower Alexander Valley as part of the monitoring program.

Mitigation Measures:

3.2-5 **Monitoring Requirements**: The following additional monitoring requirements shall be incorporated into the ARM Plan and related mining ordinance amendments for the lower Alexander Valley and, as appropriate, into the conditions of the project, to track gravel recharge rates, changes in sediment storage, bar area, channel stability, channel width, low water surface elevations, thalweg elevations, and pool depth. Monitoring shall be required at three different spatial scales and time periods, as follows:

(1) Extended Monitoring Reach Survey: A baseline survey starting at the Jimtown Bridge (RM 46) to one-half the distance from Gill Creek to Cloverdale Airport (RM 56.5) shall be performed prior to commencement of mining and then after a 10-year or greater flood or once every 5 years if no such flood occurs. The measurements outside of the permitted reach shall be used as a control, to determine the changes attributed to natural variation as opposed to mining activities.

(2) Permitted Mining Reach Survey: A permitted mining reach survey from RM 47.5 to RM 54 shall be conducted after a 5-year or greater flood or at least once every three years if no such flood occurs.

(3) Local Mining Reach Area Survey: A local mining area survey that includes the mined bar (one pool), one bar upstream (two riffles and one pool), and one bar downstream (two riffles and one pool) from the mined bar (a total of four riffles and three pools) performed every year for a three-year period following mining, or

By virtue of the calculation method, more weight is given to cross-sections with long interpolation distances than for more closely spaced cross-sections. A relatively small change in cross-sectional area that is propagated over thousands of feet of channel has the potential to skew the results. In addition, several of the cross-sections, particularly some of the designated “long-term” cross sections (established in the 1980’s) are generally near bridges and other infrastructure, and are often not representative of conditions along most of the channel because they tend to reflect local perturbations in the channel morphology from the structures themselves, rather than providing indications of the overall trends in channel morphology.

until performance criteria are met or as approved by PRMD through adaptive management.

The additional metrics set forth in Mitigation Measures 3.2-5a through 3.2-5g, below, shall be incorporated into the monitoring program for each of the survey areas and timeframes noted above.

3.2-5a **Sediment Storage**: To help monitor gravel recharge and other changes in channel topography, in each year following mining activities, the operator shall provide a report prepared by a qualified professional with a comparative analysis of pre and post mining topography, including estimates for the amount of change in bar elevation and a numerical calculation for sediment storage change from the prior year.

Prior to the first year of mining, a baseline Digital Terrain Model (DTM) shall be developed for the entire extended monitoring reach (RM 46 to 56.5). The baseline DTM shall have an aerial photograph of the project reach overlain with elevation contours measured at 1-foot intervals, so that channel planform and key features can be monitored over time. The DTM must include elevation data for the edge of water and above water areas to the top of bank. The DTM data shall use the same coordinate system as the County's long term cross section surveys and shall be accurate to within 1.0 foot horizontally and 0.5 feet vertically of actual 3-dimensional ground coordinates. The baseline DTM data shall be collected in the spring during low flow but before any mining commences. The extended monitoring reach channel survey above and below the proposed mining reach shall be repeated after a 10-year or greater peak flood (as measured at the Cloverdale USGS gauge) or once every five years if no such flood occurs.

After mining commences, the operator shall prepare subsequent DTM surveys of the channel bars over the 6.5 mile permitted mining reach after a moderate flood event (defined as equal to or greater than a 5-year flow event measured at the Cloverdale USGS gauge) or once every three years if no such flood occurs. The permitted mining reach and extended monitoring reach surveys may be performed in permit years 6 and 11 to avoid back to back surveys. A 1-foot interval contour map and a graphic showing the change in elevation from the previous period, and a calculation of the change in sediment storage shall be prepared from the DTM data for all bars in the 6.5-mile monitoring area. The floodplain and banks above the bar surface elevation do not need to be surveyed and contour mapped again.

The operator shall prepare an annual DTM survey of each mined bar, plus one bar upstream and one bar downstream of the mined bar, for a pre-mining baseline survey and for each of 3 years after mining commences. A 1-foot contour map of the mined bar and the upstream and downstream bars shall be prepared in each of the 3 years of monitoring along with a graphic showing a change in elevation from the previous year and a calculation showing the change in sediment storage volume. Annual DTM surveys of the local mined reaches will be included as part of the 3-year permitted reach survey in the post-mining period.

In addition to the DTM monitoring data for baseline and post-mining monitoring, the operator shall also provide a mining plan to the PRMD and the SRC prior to each season's mining. The mining plan shall include:

- A 1-foot interval contour map of bar in plan view showing pre-mining and proposed post mining contours, an outline of the proposed mining area, and indicating the low-flow water surface elevation (at approximately 200 cfs).

- Longitudinal profile over the complete bar length to low water.

- Cross-sections, with at least one cross-section through head of bar, through the topographic high point of bar, through the lower-third of the mined area, and a cross-section oriented through the upstream riffle and head of bar.

- A calculation showing the amount of aggregate to be removed.

3.2-5b **Channel Vertical Stability**: To address potential channel lowering (degradation or incision) resulting from mining, the operator shall provide an annual report prepared by a qualified professional that includes a comparative analysis of the pre and post mining water surface and thalweg elevations, and a map or aerial photograph that shows the locations of the monitoring and graphic plots of the thalweg and long-term cross-sections as follows:

- <u>Monitoring</u>: Monitoring of channel vertical stability shall consist of obtaining low-flow water surface elevation data (at approximately 200 cfs), and a thalweg elevations over the localized mining areas. The water surface elevation and thalweg shall be measured by collecting elevation data points at intervals not less than every 10 feet of channel.

  In addition to the water surface and thalweg monitoring data, cross-sections will be prepared from the DTM and thalweg survey data for the six long-term cross-sections in the lower Alexander Valley[5] once every three years.

  The operator will provide a methodology to determine a correction factor for the change in water surface elevation due to changes in low flow releases in the Russian River (50 cfs rather than 200 cfs). The correction factor may be based on a developed stage-discharge rating curve from actual water surface elevation data, or by hydraulic modeling, or a combination of both, or other methods if agreed to by the PRMD and SRC. If the PRMD, SRC, and operator cannot agree on an appropriate method for correcting water surface elevation data collected at different discharges, then changes and trends in the thalweg elevation data will be considered in addition to the water surface elevation data.

- <u>Performance Criteria</u>: Channel vertical stability shall be evaluated at two spatial scales: 1) the entire permitted reach; and, 2) the localized mining

[5] The six long term cross-sections were first established in 1962. The long-term cross-sections include Jimtown at RM 46.0, Smith levee-downstream at RM 49.8, Smith levee at RM 50.2, Smith levee upstream at RM 50.5, Smith levee 1,500 ft upstream at RM 51.0, and Geyserville at RM 52.0.

area (defined as two riffle crests upstream and two riffle crests downstream of a mined bar). The performance criteria shall be:

1) For the permitted mining reach the average water surface elevation at low flow water surface elevation shall not decrease in elevation by more than 0.5-foot below the averaged pre-mining water surface elevation; and

2) For the localized mining area (bounded by four riffle crests) the average water surface elevation at low flow water surface elevation shall not decrease by more than 0.5-foot below average pre-mining elevations; and

3) The collected thalweg elevation data will be compared to baseline data, and used to evaluate potential changes in vertical stability trends over a two year or greater period in accordance with the ARM Plan and SMARO.

3.2-5c **Bar Area:** To address potential decreases in the bar surface area the operator shall provide an annual report to PRMD prepared by a qualified professional. The report shall provide a comparative analysis of pre and post mining bar surface area:

- Monitoring: The mined bar surface area shall be measured at a consistent low flow level on an annual basis using aerial photographs and post-extraction “as-built” surveys. A report shall be provided to PRMD that includes all measurements, a key map (showing measurement locations), and bar topography. This shall be done prior to the first year of mining for a given mined bar and every year after the bar is first mined for three years following mining or until the performance criteria are met or as approved by PRMD through adaptive management.
- Performance Criteria: The bar areas within the permitted reach or at any individual mined bar shall not decrease by more than 15% relative to the pre-mining baseline survey.

3.2-5d **Low-Flow Channel Width:** To address potential increases in channel width the operator shall provide an annual report to PRMD prepared by a qualified professional. The report shall include a comparative analysis of pre and post mining measurements of the low-flow channel width:

- Monitoring: Low-flow channel width shall be measured using aerial photographs, field measurement, or data from the DTM. The channel width shall be measured at a consistent low flow level around the bar perimeter from the head of the bar to the tail (typically between the upstream and downstream riffle crest). A minimum of 12 measurements at approximately equally spaced intervals along the low-flow channel width of each mined bar shall be made. A report shall be provided to PRMD that includes all of the measurements and a map that is keyed to the location of the measurements. This shall be done prior to the first year of mining for a given mined bar and every year after the bar is first mined for three years following mining or until the performance criteria are met or as approved by PRMD through adaptive management.

- Performance Criteria: The average width of the low flow channel in the permitted mining reach or at each mined bar shall not increase by more than 15% compared with the pre-mining baseline.

3.2-5e **Pool Depth:** To address potential loss of pool depth the operator shall provide an annual report to PRMD prepared by a qualified professional. The report shall provide a comparative analysis of pre and post mining residual pool depths:

- Monitoring: The residual pool depth is the water depth at point of zero flow (depth is controlled by the downstream riffle crest thalweg elevation). The maximum depths along the thalweg through each pool, starting from the downstream riffle crest (at thalweg elevation) and ending at the first riffle crest upstream of the pool shall be measured at spacing intervals of approximately every 10 feet or less along the pool length. The depth of flow over the controlling riffle crest thalweg downstream from each pool shall also be measured at the time of the survey. The average maximum residual pool depth is the average of the measured depths less the depth of flow over the controlling riffle crest.

  After the baseline year of monitoring, pool depths shall be measured adjacent to each bar and in a localized monitoring area defined as one pool upstream and one pool downstream prior to any mining.

  A report shall be provided to PRMD that includes all the measurements of pool depths and riffle crest depths over the thalweg, a profile graph, and map that is keyed to the location of the measurements. This shall be done prior to the first year of mining for a given mined bar and every year after the bar is first mined for three years following mining or until the performance criteria are met or as approved by PRMD through adaptive management.

  A re-survey of the baseline residual pool depths shall be performed for the entire monitoring reach (from Jimtown Bridge to RM 56.5) after a 10 year or greater flow event or every 5 years if no such flood occurs.

- Performance Criteria:

  1) For the permitted reach, average residual pool depth shall not decrease by more than 5% of baseline or more than the average for the control area upstream of the mining reach.

  2) For the localized mining area, residual pool depths shall not decrease by more than 15% at either the pool or more than the average for the control area upstream of the mining site.

3.2-5f **Adaptive Management:** If any of the performance criteria are exceeded in any given year, the operator shall hire a qualified professional to conduct an investigation and provide a report including proposed remediation measures to PRMD for review within 60 days of the monitoring report. The PRMD in consultation with the SRC and resource agencies will determine what steps should be taken to meet criteria, including but not limited to suspension of mining, additional studies or monitoring requirements, modified mining methods, limitations on the location of future mining activities, additional enhancements or other remediation measures. The operator shall suspend mining, conduct any necessary studies and incorporate changes to the monitoring program, annual mining plan or Enhancement/Reclamation Plan, and/or implement other remediation, as determined necessary by PRMD.

3.2-5g **Aerial Photographic Monitoring:** To provide the information needed to monitor changes in the channel morphology, riparian, and aquatic habitat conditions, aerial photography will continue to be collected in the Lower Alexander Valley.

- Monitoring: The operator shall continue to fund a proportionate share of the County's annual aerial photography cost for the Lower Alexander Valley mining reach and a portion of the areas up and downstream, encompassing the distance from RM 46 to RM 56.5. The County will have the photography flown at a sufficient resolution to develop topographic elevations with an accuracy of plus or minus approximately 1 foot.

Impact Significance After Mitigation

Mitigation Measures 3.2-5a through 3.2-5g would reduce impacts related to changes in channel geomorphology and potential for flooding to a less-than-significant level. Incorporation of these mitigation measures, monitoring and performance criteria will ensure that removal of sediment from bars will not disrupt the geomorphic processes that maintain pool and riffle habitat.

In the permitted project reach area, monitoring in year 6 may be performed one year earlier and combined with the extended project reach monitoring in year 5 instead of doing back-to-back surveys of the extended project reach and the permitted project reach.

Impact 3.2-6 Lowering Groundwater Table. Mining operations could cause downcutting of the channel bed and lower the groundwater. This is a potentially significant impact.

Groundwater could be affected by instream mining activities, particularly over a period of multiple years at one location, if gravel extraction exceeds the established baseline and results in downcutting of the channel. If the channel bed is lowered so that it intersects the groundwater table, the groundwater would flow to the channel and the water table would be lowered. However, the project proposes to limit mining activities to areas above the water table and outside the summer low-flow water channel, thus ensuring that groundwater lowering would not occur. Mining activities would be limited to an elevation of 1-foot above the established baseline elevation (summer low water level) in the river for all mining techniques except for the oxbow and alcove enhancement activities. The Adaptive Management Strategy (and performance measures identified above) also ensure that a balance between extraction and recharge of gravel, preventing incision of the channel bed. Impacts associated with the reduction of groundwater are also evaluated in Section 3.10, "Public Services and Utilities".

While impacts associated with the depletion of groundwater supplies or interference with groundwater recharge would be less than significant, the ARM Plan requires monitoring of ground water levels four times a year at existing or new wells at a minimum spacing of one every half mile. The proposed amendments to the ARM Plan call for a change in the monitoring program to only require monitoring of the thalweg and water surface elevation.

Groundwater elevations and storage in the mining reaches are affected by a number of factors independent of instream mining, including pump rates, river flow management, and complex recharge mechanisms (i.e., tributary inflows, discontinuous confining layers, geologic controls, etc). While well monitoring would provide some information regarding changes in groundwater conditions, it does not help identify the causes of those changes. The proposed monitoring of thalweg and water surface elevations (described above) is a more accurate means of detecting the type of channel bed elevation changes associated with mining activities that could potentially affect groundwater conditions. The performance criteria of no more than 0.5 foot change in channel bed degradation avoids potential impacts to groundwater from in-stream mining operations. Because channel vertical stability surveys will detect any potential changes to the channel bed that influences the groundwater table, further well monitoring is unnecessary. Furthermore, the history of the Russian River demonstrates that the river recovers if mining is suspended to allow large flood events to aggrade the channel bed. Therefore any impact on the groundwater level is potentially significant but would be temporary and fully mitigated with the measure described below.

Mitigation Measure 3.2-6 The annual surveys for channel bed vertical stability (see mitigation measure 3.2-5b, above) shall be evaluated for any potential trend in channel lowering that may affect groundwater levels. If the average low flow water surface elevation exceeds the performance criteria or the thalweg surveys indicate a downcutting trend occurring in the vicinity of mining activities, the operator shall hire a qualified professional to conduct an investigation and provide a report including proposed remediation measures to PRMD for review within 60 days of the monitoring report. The PRMD in consultation with the SRC and resource agencies shall determine what steps should be taken to meet the criteria, including but not limited to suspension of mining, additional studies or monitoring requirements, modified mining methods, limitations on the location of future mining activities, additional enhancements or other remediation measures. The operator shall suspension of mining, conduct any necessary studies and incorporate changes to the monitoring program, annual mining plan or enhancement/ reclamation plan, and/or implement other remediation as determined necessary by PRMD. These mitigations shall be incorporated into the ARM Plan and related ordinance amendments for the lower Alexander Valley Reach, as well as, the conditions of approval for the mining permit.

Impact Significance After Mitigation

Mitigation Measures 3.2-6 would reduce potential impacts to groundwater to less-than-significant levels.

Project Impacts

This section provides a full and independent analysis of all potential impacts on hydrology and geomorphology that could occur as a result of implementation of the project proposed by the applicant, including the mining plan and river enhancement activities. The project is not expected to generate substantial additional runoff to the existing stormwater drainage system; therefore, the project would not create or contribute to runoff that would exceed the capacity of existing or planned stormwater drainage systems. The project does not include any proposal to place any permanent structures within the 100-year floodplain that would impede or redirect flows. The temporary bridges that would be placed across the river would be removed at the end of each mining season prior to the rainy season when high flows may occur. The discussion below focuses on potential significant effects that could occur from implementation of the project.

Impact 3.2-7 Over-mining and Depleting the Sediment Supply. Over-extracting gravel bars could remove sediment at a rate faster than is naturally recharged, which could lead to channel incision, bank erosion, loss of riffles and pools, and general simplification of aquatic habitat. These changes could in turn expose land and structures to significant risk of failure and loss during flood events. This impact is potentially significant.

Syar proposes removal of a maximum of 350,000 tons of gravel per year over the 15 year permit term. Recent data indicates that the project reach is aggraded with a significant volume of gravel in storage in the bars. Syar estimates that approximately 4.0 million tons are available from all 15 bars if they were mined as proposed. The operator would, therefore, remove the existing accumulated sediment over an estimated 10-year period and may return to mine the bars if additional recharge occurs. The estimated average annual replenishment rate using the best available data for the lower Alexander Valley is approximately 346,000 tpy, although different, lower rates have been estimated from various sources (see discussion of geomorphology above in Section A, “Setting”). Based on this average annual replenishment rate, the proposed gravel mining should be in balance with the rate of recharge after the accumulated gravels are removed. This would be consistent with the ARM Plan goals to balance the amount of sediment removal with the amount of recharge. However, gravel replenishment does not actually happen on an average annual basis there are years when there is little to no recharge and years when recharge will greatly exceed the average annual rate. Additionally, the 346,000 tpy is an estimate from the past ten years of available data. The recharge rate in the future could be higher or lower than this value.

The ARM Plan calls for mining at a sustainable yield by establishing baseline elevations below which mining will not occur and using buffers to retain important geomorphic features and maintain fluvial processes. Syar has proposed to mine the sediment volume that has accumulated in the form of bar storage over the past 15 years using the horseshoe and ESDH methods. Once each bar has been mined, possibly within the first 10 years, Syar would return to previously-mined bars only if there is sufficient replenishment above the baseline elevation. Statistically, it is likely that significant replenishment will occur given the likely probability of flood occurrence.

Monitoring data (ENTRIX, 2010) indicates that there is net sediment storage over time (even after much greater quantities of sediment extraction in the 1980s and earlier), so that the bar forms and other geomorphic features will be maintained as long as excessive sediment (beyond what can be naturally replenished) is not removed through mining. If the river transport capacity exceeds the sediment availability, the flow may become sediment-starved and prone to induce increased erosion of the channel bed and/or banks to compensate for that loss (Kondolf, 1997). If the sediment supply is substantially reduced, the river will adjust its fluvial processes and its geomorphic form in various ways. The river may have greater energy to expend on erosion of the river bed, bars, and banks, in an attempt to increase the sediment supply. This increase in erosion of the channel itself in order to increase sediment supply is known as a “sediment starved” stream or the “hungry water effect.” In response to reduced sediment availability in the channel, the river may adjust by mobilizing more sediment through channel incision (deepening of the active channel through scour of the bed) and/or bank erosion. Channel incision results in steeper banks, and if the banks are over-steepened beyond the natural angle of repose, they may erode and collapse. Channel incision on the Russian River can also initiate down-cutting on tributaries.

Over-mining can also erode crossing riffles if bar forms are not protected, particularly the upstream head of the bar. This in turn would lower the upstream pool depth because the downstream riffle is a hydraulic control on the upstream pool. Loss of pool depth due to scour of the riffle would degrade the summer rearing habitat for salmonids. In addition to loss of pool depth, the sediment deposition and sorting process at riffles that provide spawning habitat may be disrupted by scour and loss of spawning gravels.

Over-mining practices that result in a substantial change to the bar form (for example, flat-top the bar or allow the perimeter of the bar to erode) can also increase the width of the low-flow channel at the expense of the flow depth over pools and riffles. Lower flow depths in the summer low flow channel can lead to warmer water temperatures, higher predation, and simplification of the complex hydraulics that provide good aquatic habitat.

As discussed above in the Program Impacts, mining has the potential to alter the channel forming processes, which could lead to degradation of the channel bed and result in extensive erosion of river banks and downcutting of the river bed and its tributary streams. This impact was observed in the Middle Reach prior to adoption of the 1994 ARM Plan and associated standards, but the river has largely recovered from these past mining practices, and implementation of the existing ARM Plan has prevented impacts of the scale and magnitude that occurred in the 1980s.

Mitigation Measures: The key mitigation approaches to substantially reduce the potential for impacts associated with over-mining are to (1) partially retain the bar form, particularly the bar height on the perimeter along the low-flow channel and the bar head, (2) to retain the bar and other geomorphic features of the channel up to approximately the elevation of the bankfull (dominant) discharge, (3) limit mining depths on the bar, and (4) monitor channel geomorphic conditions and adaptively manage mining activities. Mitigation Measures 3.2-1 and 3.2-5a through 3.2-5e are described in the Program Impacts section above and shall be incorporated.

Impact Significance After Mitigation

Mitigation Measures 3.2-1 and 3.2-5a through 3.2-5g would limit potential for over-mining to occur and reduce the impact to less than significant levels.

Impact 3.2-8 Reduced Lateral Bank Erosion at Point Bars. Project related mining will tend to straighten the meander of the low flow channel and reduce the angle of attack on the bank opposite of the mined bar thus decreasing the shear stress and erosion potential immediately opposite the mined bar. This impact is beneficial.

Bank erosion is part of a natural dynamic process of bar-building and lateral channel migration across the floodplain for meandering to braided channels such as the Russian River in the lower Alexander Valley. Prior studies have determined that the Alexander Valley was historically a wide, unconfined, and meandering to braided stream with multiple channels across the floodplain (PWA, 1993). Meandering to braided stream types, typically found in wide alluvial valleys, are characterized by high bank erosion rates, deposition and sediment storage in bar formations, and annual shifting of the channel bed location. A combination of conditions is responsible for channel meandering and associated bank erosion, including high sediment loads, moderate channel gradients, and flashy runoff conditions. These are fundamental geomorphic characteristics of the Russian River that control the channel form and ongoing river processes today. The river retains its natural tendency to build bars and to laterally migrate and meander as it is constantly attempting to re-exert its natural, stable form, even though it has been substantially channelized and confined. Due to the confined channel and bridge constrictions in the project area, sediments rapidly aggrade the point bars upstream of the bridge constrictions. The point bar building process and related lateral migration of meanders in response to the point bar development also increases bank erosion. Thus, much of the bank erosion occurring today is attributable to several factors from past land use practices.

Lateral channel migration occurs as bars tend to build in both height and to pro-grade out toward the opposite bank by depositing sediment. Flow is directed toward the bank opposite the bar particularly past the bar apex, which tends to erode the bank. Additionally there are secondary helical currents that flow across the bar toward the opposite bank that scour the pool adjacent to the bar and also to erode the bank. Over time, the bar and low flow channel laterally migrate across the valley flat through this process of deposition and erosion (see discussion of geomorphology above in Section A, "Setting" for a more detailed description of bar building process and lateral bank erosion/migration).

Bar mining can be beneficial to adjacent land uses by reducing natural bank erosion rates. One objective of the ARM Plan is to reduce the potential for erosion. The 1994 ARM Plan recognizes that "removal of large accumulations of gravel may decrease the potential for bank erosion in some cases." This occurs because sediment removal reduces sediment storage in bar formations, lowering bar height and temporarily increasing flood conveyance capacity, and essentially interrupting bar-building and associated lateral channel migration processes. Bank erosion can have both positive and negative effects. Negative effects include the loss of stream-side agricultural soils and riparian vegetation, increased sedimentation, damage to infrastructure, and loss of fishery habitat. Positive effects include recruitment of large woody debris and gravel to the channel, which are valuable components of fish habitat; promoting a diverse riparian composition and age structure by exposing new soils and surfaces for colonization; and providing sediment for bar-building that is part of the natural fluvial processes. The reclamation/enhancement plan incorporates enhancement features that would provide some of these positive effects while also removing gravels and reducing erosion. The proposal would strengthen the banks with riparian vegetation or in some cases (such as at the point bars) more extensive bioengineered bank stabilization measures may be utilized.

Mitigation Measures: None. The impact is beneficial, though temporary. The reclamation/enhancement plan would provide additional long-term benefits of strengthening the banks.

Impact 3.2-9 Temporal Increase in Flood Capacity. Mining will temporarily increase channel capacity and reduce potential for flooding.

Removal or alteration of the major features of the river, such as portions of the gravel bars, can directly affect flooding potential of the river. Instream mining of sediments increases the flood conveyance capacity by providing additional cross-sectional space for flood water that currently does not exist. The mined reach would incrementally provide greater flow capacity as mining proceeds, and thus should flood less frequently and/or to a smaller areal extent or depth than if that reach of the river were not mined. The added capacity would be temporary, and would eventually diminish as the excavated sites refill with sediment. Nonetheless, the benefit of increased flood capacity could be realized for many years. Thus, the proposed project would contribute incrementally to increased flood conveyance capacity in this reach, a beneficial effect.

Mitigation Measure: None. Increased flood capacity is a temporary beneficial impact.

Impact 3.2-10 Increased Erosion Downstream. Project related mining may increase flow velocities and reduce the sediment supply immediately downstream of mined bar(s), thus increasing potential for scour and erosion on the riffle and bank below the mined area. This is a potentially significant impact.

Gravel extraction results in a decrease in shear stress which accelerates sediment deposition on the post-mining bar surface and promotes recovery of the channel bar surface and fluvial processes following gravel extraction. There is a potential that as mining removes sediment from the channel and the mined bars trap the incoming sediment load, downstream bars are temporarily starved of sediment. This depletion of sediment can be amplified if multiple adjacent bars are mined at the same time. Additionally, mining adjacent bars has the potential to straighten the flow path at moderately high flows over a relatively long channel length, potentially increasing flow velocity. This can increase the erosion of the riffle and banks downstream from the mined bar(s). Strengthening the banks along the river corridor is needed to reduce the potential for localized erosion impacts of mining activities.

The ARM Plan PEIR recognized the potential for mining to increase erosion and required all instream operators to contribute to a new Russian River Gravel Mitigation Fund (RRGMF) to mitigate for these potential long-term effects. The fund as established by the Board addressed four specific programs for mitigation of the long-term cumulative impacts from both terrace and instream mining activities including: agricultural support; recreation enhancement; flood protection; and stream restoration. However, the ARM Plan program also provided for disputes regarding the potential for impacts to be raised during the County permit proceedings and allowed for adjustments to the mitigation fee charges by the Board of Supervisors based on annual reports or other information. To date the County has not collected sufficient funds to cover the costs of any bank repairs or substantial stream enhancement, other than collecting for a portion of the fish ladder installed in Healdsburg just below Memorial Beach. Furthermore, the cost of design and construction upon which the fee was based has increased substantially and the fee did not include the cost of environmental review or permitting. Syar has proposed a more comprehensive River Enhancement/Reclamation Plan and therefore is requesting a waiver of the fees for past due mining activities as well as, for the current permit proposal. Syar proposes to complete six specific enhancement projects to excavate and replant oxbows, flood terraces and alcoves within the mining reach and thereafter proposes to contribute up to $0.30/ton towards additional enhancement efforts, such as additional riparian planting, installation of large woody debris, and/or bioengineered bank stabilization measures. The use of a cost per ton equivalent ensures that the enhancement activities will be relative to the amount of materials mined.

Because the Russian River is an artificially confined waterway which increases the sheer stress and erosion potential, it is extremely difficult to differentiate the causes of erosion related to recent mining activities from the historical encroachment on the river migration corridor by the construction of levees, channel straightening, bridges, and other land uses. Additionally, some bank erosion is part of a natural process of bar-building, with associated lateral channel migration that creates a meandering sinuous channel. For these reasons, it is recommended that the RRGMF program be revised to require that expansion of riparian vegetation and other measures to stabilize banks be incorporated into the Enhancement/Reclamation Plan rather than collection of the fee when exceptions to the mining standards are required.

Mitigation Measures:

3.2-10a The operator shall provide and implement a riparian vegetation planting plan for the areas within the mining reach to strengthen the banks along the river and increase riparian areas, subject to review and approval of PRMD. The area of riparian plantings shall be equivalent to 25% of the area of the mined bars (or about 25 acres total for the 15 year permit) and shall be implemented incrementally each year that mining occurs or prior to mining. Planting of areas larger than the mined bar may be banked for credit towards future mining sites in the mining reach. The estimated cost of the riparian planting should be the equivalent of $0.30/ton as adjusted annually by the construction cost index for inflation.

3.2-10b Where mining up to two-thirds of a bar or the area upstream of the apex (or upper half) of the bar has been approved, annual mining plans shall avoid mining of the bar immediately upstream in the same year or in the subsequent 2-year period unless a minimum of 2-feet of recharge has occurred on the mined bar and the bar head elevation has been stable as determined by PRMD in consultation with the SRC and resource agencies.

Impact Significance After Mitigation

Mitigation Measures 3.2-10a and 3.2-10b would reduce impacts to less-than-significant levels.

Impact 3.2-11 Hazardous Materials. Project-related activities could result in the release of and exposure to hazardous contaminants, resulting in diminished water quality of the Russian River within the study area and in areas downstream of project mining and enhancement activities.

The potential exists for common contaminants such as fuels, oils, hydraulic fluids, and other petroleum products used in operation of mining and construction equipment to be introduced accidentally through spills into the waterway directly or incrementally through surface runoff from haul routes and staging areas if proper procedures are not implemented to contain the discharge. The proposed project does not entail the use of any uncommon contaminants (e.g., heavy metals, radioactive materials, and listed toxic chemicals, etc.). Contaminants in sufficient concentrations could adversely impact water quality. Please refer to Section 3.11, “Hazards and Hazardous Materials”, for a discussion of potential effects associated with the accidental release of hazardous materials into the river. This is considered a potentially significant impact.

Mitigation Measure

3.2-11a Implement the Spill Prevention Fueling and Lubrication (SPFL) Plan for each individual mining site as part of the annual mining plan, as required by Mitigation Measure 3.11-1 in Section 3.11, “Hazards and Hazardous Materials”. The SPFL Plan shall include the following measures:

- All refueling and maintenance of mobile vehicles and equipment shall take place outside of the river channel, mining areas and access roads. Fueling and maintenance activities associated with other less mobile equipment shall be conducted with proper safeguards to prevent hazardous material releases.
- All chemical dust suppressants and slope stabilization chemicals or polymers, and sediment pond enhancement chemicals or polymers shall be EPA-approved and shall be used strictly according to the manufacturer’s directions. An accurate accounting of the kinds and quantities of these materials used on the site shall be maintained by the operator.

Impact Significance After Mitigation

Mitigation 3.2-11a and 3.2-11b would reduce potential impacts associated with the accidental release of hazardous materials, which would in turn reduce the potential for water quality impacts related to hazardous materials to a less than significant level.

Impact 3.2-12 The proposed aggregate skim, road construction, and temporary bridge building for access to gravel bars could potentially alter water quality and aquatic habitat of the Russian River due to increased erosion, sedimentation, and turbidity.

The proposed project would temporarily disturb sediments on the surface of the bars, breaking up the coarser armor layer on the surface during the skimming process. This exposes gravels and sands below the armor layer, which can be more readily entrained by flows that over top the bar. Thus, skimming activities often result in a higher proportion of sand and fine sediment on the mined surface compared to the pre-mining condition. The mining plans would excavate a horseshoe shaped trough that would extend to the low flow channel at the downstream end of the bar (see Figure 1-5). The final excavation to connect to the low flow channel elevation may allow sediments to discharge to the river. Any potential sediment input into the river could result in temporary increases in turbidity and sedimentation within and downstream of the mining site. Sedimentation could adversely affect pool and riffle habitats (impacts to fish habitat is discussed in Section 3.4, “Fisheries Resources”).

Sediment input into the river could occur after the mining season has ended, through localized precipitation-generated runoff and/or from high flow events that eventually overtop the mined bar. However, sediment input and turbidity generated in association with the bar skimming activities from the mined bar surface is expected to be nominal in comparison to the natural sediment input and turbidity generated by the watershed. In regard to localized precipitation-generated runoff, Syar proposes to conduct bar skimming and proposed enhancement activities in the dry season from June 1st to November 1st, chiefly, but not entirely, outside the wetted stream and above the summer low-flow channel of the Russian River, thus limiting erosion potential and sediment discharge into the river. Syar would also implement BMPs to minimize erosion at access roads and staging areas (see Chapter 1, Introduction and Project Description). Furthermore, bridges would be in place from June 15th to October 15th to limit disturbance within the active river, consistent with NMFS’ regulations regarding the placement of crossings. The temporary bridges would be removed at the end of each mining season so as to not restrict winter flows.

Syar would install temporary bridges using railroad flatcar bridges or equivalent structures to provide a minimum clearance of four feet above the summer low-flow channel elevation and a minimum of 20 feet span across the waterway as required by the County’s ARM Plan and mining ordinance. Construction of the bridges would not involve any excavation activities, but would require Syar to place fill on either side of the channel above the natural grade to form the abutment for the bridge. Only clean, washed gravel would be used as fill in the water for bridge abutments to get the minimum clearance and provide additional support. Gravel placed in the river would be pushed out, rather than dropped in the river. Wet entries of the equipment would be minimized.

Road access to mining sites could require the removal of vegetation and increase the potential for sediment to flow down the road cut to the river, increasing turbidity. There is a potential for erosion from the banks cleared for access. The mining ordinance limits access roads to 15-feet reducing the amount of grading and other earth disturbance activities, and reducing the road surface areas potentially exposed to erosion.

After the mining season, the first fall rains tend to occur without much runoff, as the dry, porous gravel bars and floodplain absorb much of the precipitation prior to becoming saturated. These early rains would cause a substantial portion of the exposed sand and fine sediment to infiltrate down into the post-mined surface, leaving a layer of relatively clean exposed gravel. This gravel helps stabilize the post-mined surface and reduces the potential for erosion and transport of fines from the bar and floodplain during subsequent precipitation and localized runoff events and/or high flow events that may overtop the bars.

To address higher flows (generally in winter and early spring) that overtop gravel bars, inundate the floodplain, and entrain fine and coarser sediments, the project proposes maintaining gravel bars with intact head of bar and edge of water buffers that create a condition where the bars initially become inundated through a backwater effect. This backwater effect would be generated by the head and edge of bar buffers directing the river flow around the mined surfaces to the downstream end of the bar. Low-flow velocity backwater would originate at the downstream end of the bar where the skimmed area connects to the low flow channel and slowly inundate the mined bar area and eventually the floodplain as the river rises. During this period, fine sediments may become entrained in river flows and create increased turbidity in the excavated area and downstream. At the same time, the backwater areas at the tail of the mined bar also may become depositional sites for fines that originate from upstream locations within the watershed that are suspended in the river flows. In this manner, the proposed mining could help to decrease suspended sediments.

At higher peak annual flows (exceeding approximately 11,000 cfs), the upper head and edge of bar areas would begin to be overtopped, but the backwater pool on the downstream bar surface would decrease the river's sediment transport ability at that location as a result of decreased velocity, causing river sediment to settle out. Once the bar is overtopped, the entire mined area would create slackwater areas for fine sediment deposition. At this stage, the main channel would continue to have high water velocity, which may carry a large amount of fine and some coarse bedload sediment. Observations and surveys indicate that much of the Russian River watershed has a large proportion of fine sediments, even in areas where mining has not occurred. Fine sediments may be mobilized and transported from the bar surface during the first substantial storms following mining that cause flows to overtop the bar. During these storms, large amounts of fine sediment are likely mobilized throughout the watershed, resulting in high turbidity even without mining (NHC, 2003). As the bars and floodplain are depositional areas within the river, sediments would be deposited on a bar and/or floodplain at the same time other sediments wash from the mined bar and/or floodplain, potentially causing sedimentation of pools or riffles. The additional sediment produced from the mined surface would most likely be a nominal increase and indistinguishable from the fine sediments and turbidity generated throughout the watershed.

Syar collected post mining turbidity and total suspended solids monitoring data in 2002, 2003, and 2008 as required by the conditions established by the Regional Water Quality Control Board under Section 401 water quality certification for mining of Bar 2 and Bar 13 in the Middle Reach. The water quality samples were taken at the upstream head of the mined bars, at the downstream tail of the mined bars, and about 800 feet below the mined bars. The data is provided in Table 3.2-6. There is no particular trend evident from the data. Some samples show an increase in the concentration of the water quality parameters from upstream to downstream, which might indicate contribution of sediments from the bar surface, but other samples show a decrease from upstream to downstream, indicating that the bar surface did not contribute to the turbidity or suspended sediment and may have reduced the concentration. It is noteworthy that the head of bar and side bar buffer requirements in the Middle Reach are not as rigorous as those proposed for this permit in the lower Alexander Valley.

Table 3.2-6
Total Suspended Solids (TSS) and Turbidity Monitoring in the Middle Reach

	Bar 13			**Bar 2**		
12/16/2002	A upstream head	B downstream tail	C 800 feet downstream	A upstream head	B downstream tail	C 800 feet downstream
TSS (mg/l)	2,200	1,300	1,200	2,200	2,600	2,000
Turbidity (NTU)	1,800	1,400	2,200	1,500	2,000	1,700
Flow >6,000 cfs						
4/28/2003	A upstream head	B downstream tail	C 800 feet downstream	A upstream head	B downstream tail	C 800 feet downstream
TSS (mg/l)	43	120	97	260	180	110
Turbidity (NTU)	110	120	130	190	180	150
Flow unknown						
1/4/2008	A upstream head	B downstream tail	C 800 feet downstream	A upstream head	B downstream tail	C 800 feet downstream
TSS (mg/l)	520	390	692	458	768	806
Turbidity (NTU)	450	400	560	400	510	530
Flow=20,000cfs						

A = upstream at head of mined bar. B= downstream tail of bar C = approx 800 feet downstream of bar

Mitigation Measures

Mitigation measures 3.2-2 (Head of Bar Buffer) and 3.2-3 (Side Bar Buffer) function to retain the bar form, preventing inundation of the mined surface until flows reach at least 11,000 cfs, and preventing lower flows from entraining sediments from the skim floor. This will reduce the risk that fine sediments will be entrained from the bar surface and potentially deposit in pool or riffle habitats. When the head of bar and side bar buffers are overtopped, flows will be high with suspended sediment concentration so that entraining sediments from the skim floor will only represent a nominal increase in turbidity or suspended sediment load. Lower flows may backwater into the mined bar tail area providing less turbulent, sheltered areas for suspended sediments to deposit outside of the low flow channel, reducing the opportunity for pool or riffle fine sediment deposition.

Mitigation measures identified in Section 3.4, “Fisheries Resources” also identify supplemental AMS monitoring of riffle habitat quality, pool depth and grain size (Mitigation Measure 3.4-5a). These mitigation monitoring measures reduce the potential for adverse sedimentation of pools and riffles.

Syar has identified various mining methods and operating standards that would avoid or reduce the impacts on wetlands and waters of the United States and the state, including avoidance of the active waters during mining procedures and implementation of BMPs (see Chapter 1.0, “Introduction and Project Description”). Mitigation Measure 3.3-8 (Section 3.3, “Vegetation and Wildlife”) provides measures to reduce the potential for erosion and sedimentation to occur through riparian planting. In addition, a dewatering plan would be implemented during enhancement activities, if work in the active stream channel is necessary for construction of alcoves. Mitigation Measures 3.3-9a through 3.3-9c provide additional mitigation measures for minimizing water quality degradation.

3.2-12a Temporary bridges, if required, shall provide a minimum clearance of four feet above the summer low-flow channel elevation and a minimum of 20 feet span across the waterway. Only clean, washed gravel shall be used as fill in the water for bridge abutments to get the minimum clearance and provide additional support. Gravel placed in the river shall be pushed out, rather than dropped in the river. Wet entries of the equipment shall be minimized.

3.2-12b The operator shall implement the following BMPs to minimize erosion at access roads and staging areas:

1) Road surface drainage measures shall be implemented for any newly constructed roads to minimize erosion from drainage that originates from the road surface, cut-bank, or hillslope drainage that crosses the road alignment. Road surface drainage shall be preferentially out-sloped where feasible and incorporate rolling dips so that road surface is drained toward stable, vegetated areas, and away from gullies, swales or other watercourses that drain toward the Russian River.

2) If insloping is the only option to drain surface runoff from the road surface, then an inside drainage ditch shall be constructed to remove surface runoff. Ditch relief culverts shall be designed and installed at intervals along the road that are frequently spaced to prevent gullying of the ditch and culvert outfall, and shall not discharge into a watercourse.

3) Ditch flow shall discharge into vegetated buffer areas or filter strips before reaching a watercourse.

4) All road construction activities shall be conducted during the dry season and completed by October 15.

5) Keep soil disturbance to a minimum during construction. Retain rooted trees and shrubs wherever possible.

6) Bare slopes created by construction activities shall be protected until vegetation can be established. Minimize surface erosion on exposed cuts and fills by mulching, seeding, planting, compacting, armoring, and/or benching prior to onset of fall rains.

7) Top soil and overburden from construction shall be stockpiled at least 200 feet away from the low flow channel of any perennial or intermittent stream and in a manner so that runoff is contained.

8) Any construction activities conducted near a flowing channel shall use silt fences, straw bale silt dams, or similar measure to prevent sediment from entering the watercourse.

9) Unsurfaced seasonal use roads and staging areas shall not be used when wet; hauling shall be limited to dry periods. Physical barricades shall be installed to block roads from winter use.

10) If excessive road dust collects during dry summer use, watering shall be used to prevent excessive loss of road surface materials.

11) Roads shall be inspected at end of fall use season for potential erosion problems during winter rainy season. Road surface grading shall be conducted prior to October 15 if excessive road dust has collected or road ruts have developed.

3.2-12c During excavation of inset floodplain benches, alcoves or installation of large woody debris or bioengineered bank stabilization features, retain a 25-foot berm or plug at the end of the work area to isolate the work site from the flowing channel until the excavation is completed. A long reach excavator shall be used to pull the gravel plug away from the river channel. Remove the plug at the final excavation to limit the potential for large amounts of fine sediments to enter the waterway. Allow any turbid water in the alcove to settle before making the final below water excavation connecting to the thalweg.

3.2-12d. The mitigation measures, conditions of approval and BMPs shall be incorporated as specifications and notes on the annual mining plans.

3.2-12e All construction personnel involved in the mining project shall attend a pre-construction/mining conference with PRMD or the SRC to review the construction BMPs and conditions of approval.

Impact Significance After Mitigation

Mitigation Measures 3.2-12a through 3.2-12e would reduce potential impacts associated with erosion, sedimentation, and turbidity to less-than-significant levels.

Impact of River Enhancement Program

The proposed River Enhancement Plan (REP) includes six projects to enhance aquatic habitat and provides a program of future enhancement activities including additional opportunities to partner with adjacent landowners to improve bank stability through riparian plantings and/or using bioengineered bank stabilization techniques, installation of large woody debris (LWD) or other enhancement features such as excavation of floodplain benches, oxbows, and alcoves.

The proposed River Enhancement Plan (REP) which includes construction of alcoves, oxbows, floodplain benches, revegetation with native species, removal of invasive species and bioengineered bank protection structures, designed to offset legacy impacts of mining and land reclamation in the project reach. Alcoves and oxbows are expected to provide high-quality habitat for fish and wildlife species, while benching methods and revegetation are expected to additionally protect river banks from erosion. Alcoves are to be constructed at the downstream ends of the gravel bar connecting the thalweg of the tributary creeks to the thalweg of the river; this would allow for increased access for salmonids from the main river to tributaries for spawning. Oxbows are to be created outside the gravel bars and extend in elevation from the summer low flow and up to 5 feet above it.

The opportunities for future enhancement projects and the six specific enhancement projects are evaluated at a project level in order to incorporate them into the permit process for the mining permit. Changes to the ARM Plan to allow implementation of enhancement features below water surface elevation are proposed at or near the river thalweg depth (below low flow water level) for alcoves, and at mean river flow level (i.e., 3–5 feet above mean low flow water level) for inset floodplain terraces, benches and oxbows. This EIR is intended to comply with CEQA for additional enhancement projects that fit within the River Enhancement Program description.

Impact 3.2-13 Expanded Riparian Floodplain. The project proposes creation of oxbows and floodplain benches or low inset terraces for riparian restoration and off-channel habitat. This is a beneficial impact.

Another key factor in the quality of habitat of the Russian River in the project reach is the lack of floodplain wetlands and off channel habitats. The historic channel incision of 6–8 feet has left many former floodplain areas high and dry terraces. These terraces are too dry to allow for natural regeneration of woody riparian species such as willows and cottonwoods. The exotic invasive Giant Reed (*Arundo donax)* has thrived and taken over significant acreage of former riparian wetlands where natural plant species have not survived. There is some regeneration of willow/cottonwood forest on the gravel bars, but these areas are subject to regular scour and therefore do not support the stable habitat conditions that promote the growth of late successional riparian (Sonoma County Water Agency, 2003). It is not desirable to raise the bed of the river to flood the terraces, as that would increase flooding of valley floor lands, but it is feasible to remove gravel from terraces to achieve a lower relief and create low floodplain surfaces for wetlands. The River Enhancement Plan (REP includes lowering terrace lands to create oxbow and alcove habitats, which are important for thermal and velocity refugia for endangered salmonids.

Mitigation Measure: None required. The impact is beneficial.

Impact 3.2-14 Increased Turbidity and Sedimentation Associated with Enhancement Projects. Proposed enhancement activities and projects, including excavation of alcoves (drainage channels connecting to tributary creeks), inset floodplain benches or terraces, installation of large woody debris and/or bioengineered bank stabilization features, could cause fine sediments to enter the active channel diminishing water quality. This is a potentially significant impact.

Construction of alcoves would involve excavating narrow drainage channels in a downstream direction to reconnect existing tributary streams across the aggraded gravel bars to the low flow channel. These alcoves would be excavated below low flow water levels and would require excavation at the low-flow channel at the downstream end of the excavation. Similarly, excavation of inset floodplain benches or terraces would require grading at or near the low flow channel increasing the potential for discharge of sediments. Installation of large woody debris or bioengineered bank stabilization features would also involve excavation of the banks below summer low flow water levels increasing potential for discharge of fine sediments into the channel during excavation.

Construction of oxbows and alcoves could cause short-term construction impacts. These impacts could include an increase in turbidity, local hydraulic changes resulting in erosion before vegetation growth is established, or increased sediment deposition in the local area, due to creation of a sediment trap. These effects are most likely to affect the enhancement features themselves rather than cause significant changes to the river morphology. As a result, the impact of REP projects on turbidity are not significant.

Creation of oxbows would involve excavation above summer low water and away from the Russian River low-flow channel. Removal and stockpiling of dredged sediments could allow drainage of turbid water to the river, however. Between oxbow construction and full revegetation, when flows increase in the Russian River and begin to inundate the newly constructed oxbow channel, turbidity could increase and fine sediments could be entrained to the main channel.

The construction of alcoves present some potentially significant short-term construction impacts because they would be excavated to the local river thalweg and connected to the river. The proposed construction sequence is designed to minimize fine sediment discharge or turbidity to the river by excavating the land side portion while leaving a 25-foot long, earthen plug of existing ground from the river bank to the excavation area. This will separate the dredging and soil disturbance area from the live river. When the excavation of the alcove is complete, the plug would be removed from landside to river shoreline using a long reach excavator that pulls earth away from the river. As the final segment of the plug is removed, inflow to the alcove would be allowed to equilibrate the water levels between river and alcove. The final excavation would involve removing several bucket loads of material to achieve the finished grade at thalweg, and this could release some fine sediments and turbidity to the river, but it would likely not last more than an hour after completion.

A potentially significant impact involves the REP streambank enhancement construction. Although no specific REP are planned at this time, the following types of projects have been identified to enhance riparian and aquatic habitats and to reduce streambank erosion:

- Create low benches by excavation to support woody riparian vegetation
- Reduce lateral erosion, and stabilize shorelines and low benches to provide sites for establishing multi-age class riparian communities
- Install large woody debris to reduce erosion and enhance aquatic habitat

All of the enhancement projects could require excavation at or below the elevation of the low flow channel. This could create turbidity and sedimentation if the enhancement sites are not isolated from the wetted, flowing part of the river channel.

Mitigation Measures:

3.2-14a. Construction staging and erosion control BMPs shall be used to contain sediments and prevent their delivery to the low flow channel. This shall include the use of BMPs built into the construction plan by use of site specific SWPPPs.

3.2-14b. Excavated sediments shall be removed to a contained area outside of the channel and allowed to drain so that turbid water does not enter a flowing channel.

3.2-14c. A specific construction and grading plan shall be prepared as part of the annual AMS mining plan process.

3.2-14d. The operator shall isolate any future proposed bank enhancement sites that would require construction at or below the low flow water elevation, or where sediments could directly enter the river. Dewatering and diversion of the main channel shall be used to isolate enhancement sites. A qualified biologist shall be available to rescue and move fish from the dewatered section. Specific methods for dewatering and fish rescue shall be considered during the AMS planning process in consultation with CDFG and NMFS.

3.2-14e. All enhancement sites shall be monitored for a period of 5 years following construction to determine that any erosion control features, or revegetation measures, are properly working, and are not causing new erosion or instability. Enhancement site erosion control or bank stabilization measures and features that may not be properly functioning shall be repaired during the 5 year monitoring period. However, alcoves, oxbows or floodplain benches or terraces shall not be re-entered after construction in order to maintain these features until the adjacent mined bar is ready to be mined again.

3.2-14f. Vegetation used for riparian forest planting, streambank enhancements, or for revegetation of alcoves, oxbows or floodplain benches or terraces shall meet the performance criteria as set forth under Mitigation Measure 3.3-8. Areas that do not achieve this criterion shall be replanted until the success criteria are met or adjusted through Adaptive Management.

3.2-14g. The mitigation measures, conditions of approval and BMPs shall be incorporated as specifications and notes on the annual grading and mining plans.

3.2-14h. All construction personnel involved in the enhancement projects shall attend a pre-construction conference with PRMD or the SRC to review the construction BMPs and conditions of approval.

Impact Significance After Mitigation

Mitigation Measure 3.2-14a-h would reduce potential water quality impacts associated with the potential release of fine sediments into the active channel during excavation of alcoves, floodplain terraces and installation of large woody debris or bank stabilization features to a less than significant level.

Impact 3.2-15 Excavation of Alcoves from below water levels at the low flow channel of the river to the mouth of the tributary streams may temporarily cause sediments to reach the river. There is also a potential for temporary tributary channel down-cutting following excavation. These impacts are considered less than significant and the excavation to create alcoves is a beneficial impact for fish migration.

The purpose of the alcoves is to provide fish passage, cool water refugia, and velocity refuge during high flows in the Russian River. Excavation of 5 to 8 feet of sediment at the mouth of the tributaries is proposed to provide an elevation approximately below the low flow channel elevation of the river. At the connection to the river, the elevation of the alcove will be at the thalweg or below the water surface elevation.

Following excavation of a deeper channel and grading of sideslopes, the alcoves would be revegetated. For a period of time following excavation, until revegetation has occurred, there is a potential for additional sediments to be transported to the river. Although head-cutting is possible, it is not very likely and would only be temporary. Some deepening and headcutting would only extend the life of the alcove which is beneficial to fish. The alcoves are not anticipated to be permanent features.

NOAA evaluated the tributaries in the study area including Gill Creek, Gird Creek, Miller Creek and Rancheria Creek in 2007 and determined that the lower sections of the streams along the lower Alexander Valley are filled with fine sediments deposited because of aggradation of the riverbed and are considered a potential barrier to fish migration. NOAA recommended habitat restoration including excavating a low flow channel to provide for fish migration into the tributaries. Excavating to adequate depths will facilitate a longer temporal window for fish migration. With the excavation of the alcoves to the mouth of the tributary streams, it is anticipated that the fine sediments that currently clog the streams will be discharged during an initial large storm event and thereafter will stabilize and create a low-flow channel with improved access for fish migration. The river system will have mobilized other sediments during the storm runoff, such that the impact to water quality is considered negligible. Although the alcoves are expected to eventually fill with sediments, there will be a temporary beneficial impact for fish migration.

Mitigation Measure: None. This is a beneficial impact, no mitigations are required.

Impact 3.2-17 Groundwater Lowering. The excavation of the alcoves and oxbows at or below low flow water levels has potential to lower the local groundwater table. This impact is considered less than significant.

Syar proposes creation of oxbows and alcoves to enhance habitat. The alcoves would be graded at the summer low water level to connect to the river thalweg level (below summer low flow levels) to the tributaries. Digging the alcoves to the low water level may cause increased flow of groundwater into the oxbow and alcove channels if the summer low flow level is below the groundwater table. However, groundwater flow to alcoves and oxbows is unlikely to substantially lower the groundwater table because the number and total area of oxbows and alcoves to be excavated would not be significant compared to the total area of the Russian River summer low flow channel. Therefore this impact is considered less than significant because the project would not result in a net deficit in aquifer volume or a lowering of the groundwater table such that production rates drop to a level that would not support existing or planned land uses. Additionally, due to the river's topographical low point location in the watershed, any impact is likely to be local and confined to the immediate vicinity of the river. Basin-wide impacts on aquifers are unlikely as their conditions are derived from groundwater recharge over broad areas.

Mitigation Measures**:** None. This impact is considered less than significant.

3.3 VEGETATION AND WILDLIFE

This section addresses vegetation and wildlife resources that could be affected by implementation of the project. The information presented is based on reconnaissance-level field surveys, research of existing documentation, and existing studies. The study area is defined as the river segment from RM 46 to RM 55, from the Jimtown Bridge to just upstream of the proposed mining reach (Figure 1-1). The width of the study area varies and is limited on both sides of the river by the agricultural fields.

The research conducted for this section included a review of the following environmental documents and other resources discussing biological resources in the region:

- California Natural Diversity Database (CNDDB 2009);
- *Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the U.S.G.S. Geyserville and Eight Surrounding 7 1/2 Minute Quads* (USFWS 2009);
- *Mining and Reclamation Plan: For Sand and Gravel Extraction from Gravel Bars along the Russian River, Alexander Valley, Sonoma County* (Syar Industries 2005);
- *Sonoma County General Plan* (Sonoma County 1989);
- Sonoma County Code;
- *Sonoma County Aggregate Resources Mining Plan: 2002 and 2003 Annual Monitoring Program Results (Entrix 2005, 2002 and 2003)*;
- *An Evaluation of Regulations, Effects, and Management of Aggregate Mining in Northern and Central Coastal California* (Laird et al. 2000);
- *Russian River, Lower Alexander Valley, Riparian Vegetation Typing* (Brooks 2004);
- *Middle Reach Russian River Osprey, White-Tailed Kite, Yellow-Breasted Chat, and Yellow Warbler Survey Syar Industries Bars 2 and 13* (Embree and Halligan 2006); and
- *Riparian Avifauna and Herpetofauna of the Alexander Valley Reach of the Russian River, California* (Bunnell 1999).

EDAW biologists conducted reconnaissance-level biological surveys of the study area on May 7, 2007. The purpose of the EDAW field surveys was to characterize the existing biological resources and generally evaluate the potential presence of sensitive biological resources in the study area. Based on the surveys conducted to date and an assessment of habitats on-site, certain special-status plant and animal species are not expected to occur or can be entirely ruled out (see “Special-Status Species” below).

A. Setting

REGIONAL SETTING

The Russian River drains a watershed of 1,485 square miles consisting of 950,400 acres, and flows for approximately 110 miles, and enters the Pacific Ocean at Jenner, California. The river and the riparian corridor support a variety of wildlife. The area has a Mediterranean climate with coastal fog, which influences the vegetation cover. This region is characterized primarily by second- and third-growth redwood, mixed-evergreen, and mixed-hardwood forests, with chaparral associations on exposed sites and grasslands common on alluvial valleys and coastal terrace communities. River corridors in general provide migration corridors between lower and upper reaches of the river and its tributaries.

LOCAL SETTING

The Lower Alexander Valley Reach of the Russian River as defined in the County's ARM Plan extends from River Mile (RM) 54 at the confluence of Gill Creek (approximately 1.6 linear miles northeast of Geyserville Bridge) downstream to RM 47.5 upstream of the Jimtown Bridge (see Figure 1-1 in Chapter 1, "Introduction and Project Description"). There are four tributaries to the Russian River in this reach: Gill Creek, Miller Creek, Rancheria Creek and Gird Creek. These intermittent creeks flow annually with conveyance of rain water and stormwaters from the surrounding hills into the river during the wet winter season. All tributaries were dry during the reconnaissance-level survey in May 2007. Approximately 20 gravel point bars existed along the lower Alexander Valley reach during the survey. Behind and between these gravel bars exist various depressions and backwaters that may hold perennial or seasonal waters. The riparian corridor, defined as the edge of the wetted surface to the top of the bank, is 600–1,500 feet wide along this reach.

The floodplains on either side of the riparian corridor in this stretch of the Russian River are dominated by agriculture, composed almost entirely of vineyards. Generally, stands of trees line property boundaries, roadways, or ditches. These agricultural fields may extend up to 2 miles from the riparian corridor to the upland terraces. In other cases, floodplain terraces are not present. Instead, hilly open grassland abuts the riparian corridor. Urban uses are also located near the study area.

Vegetation Communities

The plant community descriptions and terminology used in this analysis are based on the riparian vegetation typing summary for the Lower Alexander Valley of the Russian River (Brooks 2004) and are supplemented by *A Manual of California Flora* (Sawyer and Keeler-Wolf 1995) and *Preliminary Description of Terrestrial Natural Communities of California* (Holland 1986). Based on this terminology, the study area supports seven different vegetation communities:

- mixed cottonwood and giant reed series,
- Fremont cottonwood series,
- annual grassland/disturbed series,
- giant reed series,
- mixed willow series,
- freshwater wetland series, and
- narrow-leaved willow series.

Additionally, EDAW biologists identified two classifications not described by Brooks: mixed riparian woodland series and salt cedar series.

Brooks (2004) describes the vegetation habitat communities occurring in the 1,265-acre study area and provides vegetation community maps of the riparian areas for the full project reach of the Russian River. EDAW biologists confirmed and updated the occurrence of these habitats, and created a map (Figure 3.3-1) of the vegetation communities within a representative section of the river (in this case, Bar S-6 and portions of Bars S-5 and S-7). Figure 3.3-1 is used to represent habitats that could exist on other bars within the study area. This map, although not encompassing all communities or habitats within the region, portrays a general nature of the locations, distributions, and quantity of vegetation communities and habitats.

Riparian vegetation and habitat are generally positioned in longitudinal strips parallel to the river. The near-river gravel bar edge (the low-flow setback) is next to the active river edge; the mid-gravel bar where most of the gravel skimming would occur is located farther away from the near-river gravel bar edge. On the far side of the gravel bar, away from the river, is the high-side setback. The wooded riparian areas mostly occur on the high-side setback areas on the river side of the agricultural fields. In some cases, especially where severe erosion is evident (e.g., adjacent to the west upstream side of Geyserville Bridge), there is no riparian vegetation zone and vineyards abut the river. Vegetation communities that lie within the frequently inundated riparian zones, such as those on the gravel bars, typically have a limited herbaceous understory because of frequent disturbance and lack of organic-rich soils. The vegetation communities that are present within the study area are described below.

Mixed Cottonwood and Giant Reed Series

The most prevalent vegetation community within the study area is the mixed cottonwood and giant reed (*Arundo donax*) community (Brooks 2004). Although this community is the most prevalent throughout the project reach, it is not depicted in Figure 3.3-1 as it was not present at this location. Mixed cottonwood and giant reed are co-dominant, having 25% cover or more. Although the cottonwood is usually more prevalent, the giant reed is consistently scattered throughout the cottonwood stands. The giant reed does not occur here in continual patches, but rather is present as scattered individuals. Willows (*Salix* spp.), coyote brush (*Baccharis pilularis*), and other plants associated with the Fremont cottonwood series are present in lower numbers. The giant reed community (shown in Figure 3.3-1), surveyed by EDAW biologists, occurs mainly in discrete separate clumps of giant reed that did not compose more than 25% of the community within the mixed cottonwoods.

Fremont Cottonwood Series

The Fremont cottonwood series is a mature habitat dominated by trees and shrubs over 10 feet tall, is found in the higher elevations of the riparian zone (i.e., on the outer edges and centers of the higher elevation gravel bars), and is composed of at least 25% of Fremont cottonwood (*Populus fremontii*). A diversity of native and nonnative woody and herbaceous species is associated with this series. Natives include Fremont cottonwood, narrow-leaved willow (*Salix exigua*), arroyo willow (*S. lasiolepis*), Pacific willow (*S. lucida* ssp. *lasiandra*), mule fat (*Baccharis salicifolia*), California black walnut (*Juglans californica* var. *hindsii*), Oregon ash (*Fraxinus latifolia*), box elder (*Acer negundo*), blue elderberry (*Sambucus mexicana*), California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), California wild grape (*Vitis californica*), and mugwort (*Artemisia douglasiana*). Nonnatives include Himalayan blackberry (*Rubus discolor*), poison hemlock (*Conium maculatum*), greater periwinkle (*Vinca major*), yellow star thistle (*Centaurea solstitialis*), giant reed, and black mustard (*Brassica nigra*). In the lower elevations, the community is less diverse and is composed mainly of Fremont cottonwood, willows, mule fat, mugwort, poison hemlock, yellow star thistle, giant reed, and black mustard.

Annual Grassland/Disturbed Series

Annual grassland/disturbed habitat contains coyote brush, grasses, and disturbed habitats. Some species associated with human-disturbed sites include the native shrub coyote brush and the following nonnative grasses and herbs: bent grass (*Agrostis* sp.), bluegrass (*Poa* sp.), sweet vernal grass (*Anthoxanthum odoratum*), wild oat (*Avena* sp.), large rattlesnake grass (*Briza maxima*), ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), orchard grass (*Dactylis glomerata*), common velvet grass (*Holcus lanutus*), foxtail barley (*Hordeum jubatum*), Italian ryegrass (*Lolium multiflorum*), mullein (*Verbascum* sp.), yellow star thistle, black mustard, Italian thistle (*Carduus pycnocephalus*), chicory (Cichorium intybus), poison hemlock, teasel (*Dipsacus* sp.), fennel (*Foeniculum vulgare*), Klamath weed (*Hypericum perforatum*), hairy cat's ear (*Hypocaeris radicata*), and common groundsel (*Senecio vulgaris*).

Giant Reed Series

The giant reed series habitat is scattered throughout the study area on gravel bars and in upland areas. This habitat is composed of nearly ubiquitous giant reed, a nonnative, highly invasive species that can establish itself in a variety of soil types and moisture regimes with the use of rhizomes and budding plant fragments carried downstream. In addition, many giant reed individuals are scattered in other habitat types. Massive efforts have been expended in California to eradicate the giant reed.

Mixed Willow Series

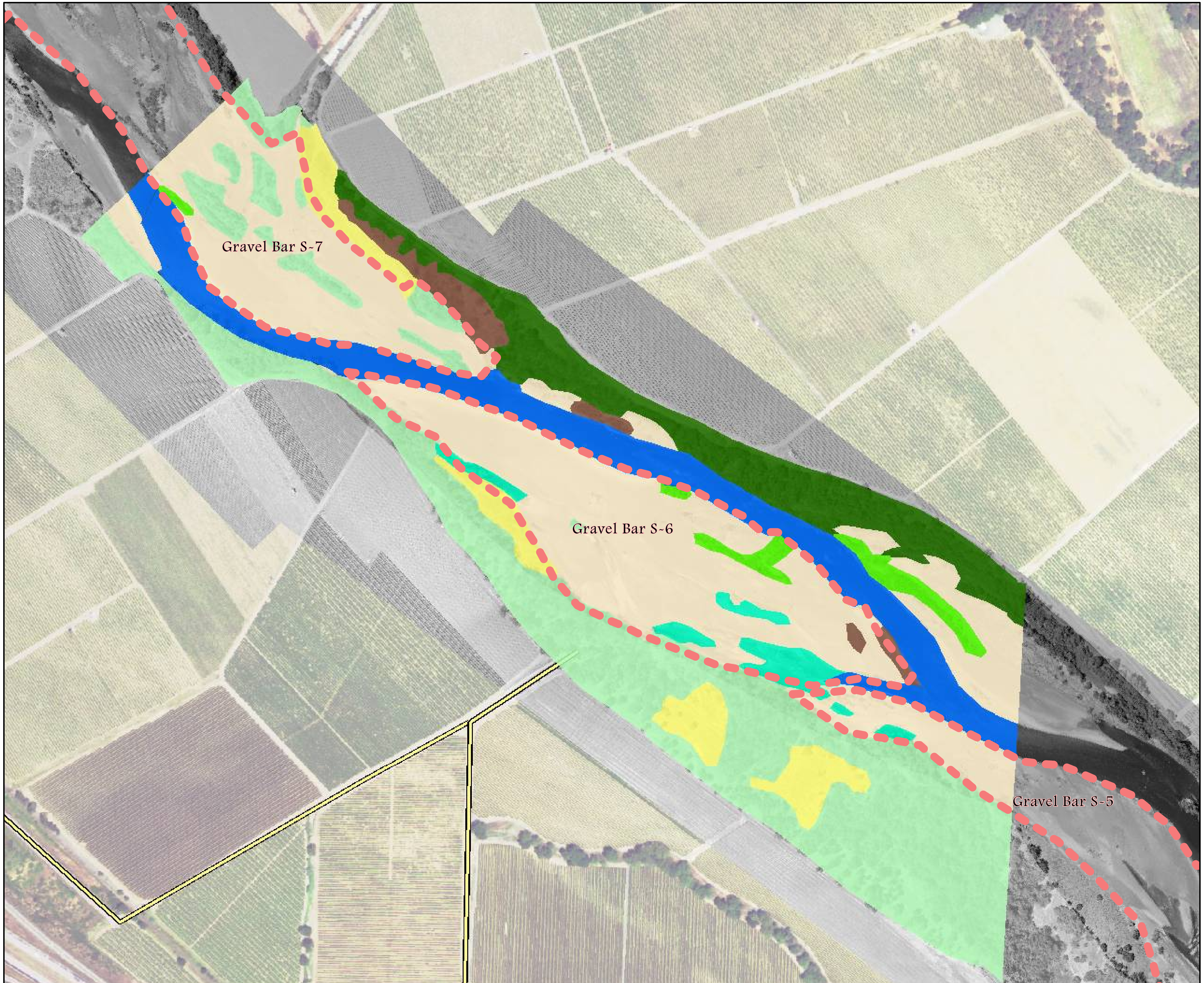
The mixed willow series is a shrub-dominated series found on almost every gravel bar in the project reach, but usually in small patches. Predominant species in this series include arroyo willow, Pacific willow, and narrow-leaved willow. Fremont cottonwood, mule fat, and giant reed may also be present.

Freshwater Wetland Series

Freshwater wetlands are usually found in areas of depressions and backwaters. This habitat describes low-gradient areas adjoining the river channel that are watered by seasonal high-water flows or a high water table. Vegetation in this type is dominated by floating or emergent herbaceous plants. In some cases, no vegetation is associated with a depression. The most common species in depressions and backwaters along the channel is the nonnative water-primrose (*Ludwigia peploides* ssp. *montevidensis*). Other common native herbs include rushes (*Juncus* spp.), giant horsetail (*Equisetum telmateia* ssp. *braunii*), knotweeds (*Polygonum* spp.), small-flowered bulrush (*Scirpus microcarpus*), broad-leaved cattail (*Typha latifolia*), tinker's penny (*Hypericum anagalloides*), common large monkey-flower (*Mimulus guttatus*), and American brooklime (*Veronica americana*).

Narrow-Leaved Willow Series

The narrow-leaved willow series is a shrub-dominated series that was present in only two acres out of the 1,265-acre study area in 2002 (Brooks 2004). This habitat type rarely occurs and is represented by a group of vegetation that is predominated by narrow-leaved willow. EDAW biologists did not observe this series on the reconnaissance site visit and it is not shown in Figure 3.3-1.



Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
Sonoma County California

AECOM

April 2010
November 2007

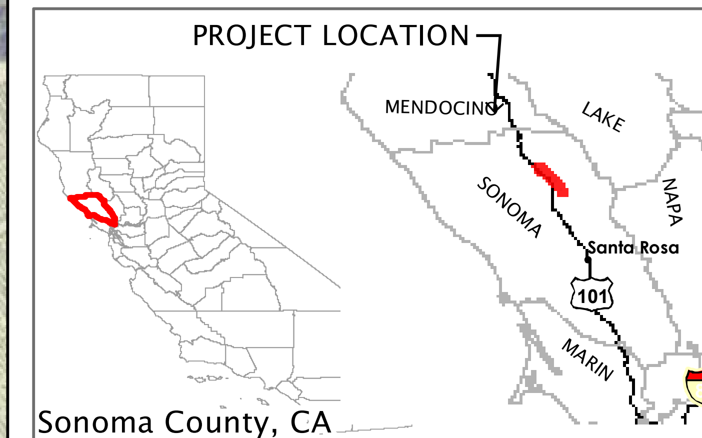


Figure 3.3-1
Representative Vegetation Habitat Map

Access Roads

Gravel Bar Boundary

Vegetation Habitat Classification

Exposed Gravel Bar
Annual Grassland Disturbed
Giant Reed Scrub
Freshwater Wetland
Mixed Willow Scrub
Active Channel
Freemont Cottonwood Woodland
Mixed Riparian Woodland

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

1,000 500 0 Feet

Source: Syar Industries Inc. EDAW,
Projection State Plane NAD 1983 California II

Mixed Riparian Woodland Series

EDAW biologists noted the mixed riparian woodland in their surveys and sample mapping of the study area (see Figure 3.3-1). This community is similar to the Fremont cottonwood series except that it has a more mixed composition of species, without any one species composing more than 25% of the community. This series is composed of a variety of vegetation, but predominantly more mature trees and shrubs more than 10 feet in height, including cottonwood, giant reed, valley oak, various willow species, black walnut, and mule fat. Herbaceous species dominate the understory, composed of the same array of species listed in the Fremont cottonwood series.

Salt Cedar Series

Of particular note was the occurrence of two individual salt cedar (*Tamarix* sp.) trees, an aggressive invasive riparian tree species recorded along the study area. This species is absent from the Brooks (2004) study. These single trees reproduce and can easily colonize to form monoculture stands on disturbed areas of the gravel bars. Although only two individual plants were noted, these invasive species quickly form a broad stand in a short time period.

Other Habitats

Although most of the communities in the Alexander Valley reach of the Russian River can be classified by a distinct vegetation community as described above, some habitats are not characterized specifically by vegetation, but by substrate, water features, or ruderal characteristics. Those habitats are presented below.

Aquatic Habitat

The main channel in the study area is considered exclusively aquatic. This habitat is described in detail in Section 3.4, “Fisheries Resources,” of this EIR. EDAW biologists observed ordinary high-water marks (OHWM) along the Russian River up to and past the outer edge of all gravel bars. An OHWM is a wetland hydrology indicator (along with soils and vegetation indicators) for establishing jurisdiction and possible regulation by the U.S. Army Corps of Engineers (USACE).

Exposed Gravel Bars

The most prevalent community type within the riverine corridor is exposed gravel bars (Brooks 2004). These are sparsely vegetated areas with a sand to cobble substrate that are seasonally flooded. The gravel bars support a variety of native and nonnative herbaceous species. Nonnative herbaceous species commonly occurring on the gravel bars included white sweet-clover (*Melilotus alba*), yellow sweet-clover (*M. indica*), bird’s-foot trefoil (*Lotus corniculatus*), black mustard (*Brassica nigra*), scarlet pimpernel (*Anagallis arvensis*), rabbitfoot grass (*Polypogon monspeliensis*), mullein, common groundsel, setaria (*Setaria viridis*), nitgrass (*Gastridium ventricosum*), fluellin (*Kickxia* sp.), and white-top (*Cardaria pubescens*). Native herbaceous species included cocklebur (*Xanthium strumarium*), Indian tobacco (*Nicotiana quadrivalvis*), turkey mullein (*Eremocarpus setigerus*), Bolander’s sunflower (*Helianthus bolanderi*), heliotrope (*Heliotropium curassavicum*), turpentine weed (*Trichostema laxum*), and paintbrush (*Castilleja miniata* ssp. *miniata*).

Road and Thoroughfares

Other small habitats of lower quality are present and mainly consist of roads and thoroughfares. These include the paved and unpaved permanent and temporary roads and trails within the study area. A total of 8 acres of this habitat type exists in the study area.

Wildlife

A variety of wildlife is present within the study area. Sixty-three species of birds, four species of amphibians, and one species of reptile were observed by Bunnell (1999) during his surveys along the river.

Bird Species

Bird species most frequently observed were song sparrow (*Melospiza melodia*), tree swallow (*Tachycineta bicolor*), plain titmouse (*Baeolophus inornatus*), scrub jay (*Aphelocoma californica*), Bewick's wren (*Thryomanes bewickii*), black phoebe (*Sayornis nigricans*), killdeer (*Charadrius vociferous*), northern flicker (*Colaptes auratus*), Nuttall's woodpecker (*Picoides nuttallii*), brown-headed cowbird (*Molothrus ater*), mourning dove (*Zenaida macroura*), and wrentit (*Chamaea fasciata*). Birds of both riparian specialty and birds from surrounding areas were present.

Although mourning dove, killdeer, and spotted sandpiper (*Actitis macularia*) prefer the open areas of gravel bars, most birds utilize the areas where taller vegetation is present, such as the Fremont cottonwood series and the mixed willow series. The understory provides foraging and nesting habitat for species such as the California towhee (*Pipilo crissalis*), spotted towhee (*P. maculates*), and California thrasher (*Toxostoma redivivum*).

Ubiquitous birds tend to be cavity nesters or scrub occupants that forage on the open gravel bars (e.g., tree swallow, Bewick's wren, bushtit [*Psaltriparus minimus*], wrentit, song sparrow, scrub jay, and plain titmouse). Generalists such as the American crow (*Corvus brachyrhynchos*) and the Brewer's blackbird (*Euphagus cyanocephalus*) were also common inhabitants. Large trees and snags also provide nesting opportunities for cavity-nesting birds, such as the chestnut-backed chickadee (*Poecile rufescens*), northern flicker, Nuttall's woodpecker, and white-breasted nuthatch (*Sitta carolinensis*).

Raptor Species

Suitable foraging and breeding habitat exists for several raptor species including Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*A. striatus*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*B. jamaicensis*), and osprey (*Pandion haliaetus*). Three riparian raptor species (Cooper's hawk, red-shouldered hawk, and osprey) were observed in the area by Bunnell (1999), and EDAW biologists also observed osprey during the reconnaissance-level survey. Syar personnel have recently observed bald eagles (*Haliaeetus leucocephalus*) (Dericco pers. comm., 2007). Small vertebrates within the habitat likely serve as a food source for predatory birds, and the large trees on-site are prime habitat for nesting raptors. Potential nocturnal avian predators may include western-screech owl (*Megascops kennicottii*), great horned owl (*Bubo virginianus*), and northern saw-whet owl (*Aegolius acadicus*), although none were observed in past surveys or by EDAW biologists in the reconnaissance-level survey.

Herpetofauna Species

Bunnell (1999) also reported the occurrence of herpetofauna[1] including bullfrogs (*Rana catesbeiana*), western toads (*Bufo boreas*), foothill yellow-legged frogs (*R. boylii*), and Pacific treefrogs (*Pseudacris regilla*). The persistent stagnant pools in the backwaters of the river bars at the edge of the riparian vegetation provided bullfrogs with suitable habitat. EDAW biologists observed as many as 30 bullfrogs (larvae and adults) in a single large backwater. Habitat for western toads, foothill yellow-legged frogs, and Pacific treefrogs also exists in many of the ephemeral pools, and EDAW biologists observed western toad tadpoles in one of the backwaters. Foothill yellow-legged frog tadpoles may also be present along shallow river margins (Bunnell 1999). Piles and layers of decaying leaves and branches provide habitat for various amphibians, including newt (*Taricha* spp.). Common reptiles within the riparian community include western fence lizard (*Sceloporus occidentalis*), northern alligator lizard (*Elgaria coerulea*), and snakes (e.g., gopher snake [*Pituophis melanoleuces*] and garter snake [*Thamnophis* spp.]).

Mammal Species

The riparian habitat provides habitat for a variety of mammal species. Tree cavities and forest understory provide escape and cover for mammals. Some of the most common mammal species of the riparian habitat include raccoon (*Procyon lotor*), western gray squirrel (*Sciurus griseus*), black-tailed jackrabbit (*Lepus californicus*), black-tailed deer (*Odocoileus hemionus*), and dusky-footed woodrat (*Neotoma fuscipes*). Potential roosting sites for various bat species exist in the crevices and hollows of the mature willow, oak, walnut, and cottonwood trees, as well as underneath the bridges found throughout the study area.

Aquatic Species

Aquatic species (including fishes) in the study area are present in the freshwater wetlands and main river channel. Many bird species such as great blue heron (*Ardea herodias*), osprey, and bald eagle utilize the aquatic habitat for foraging. California red-legged frog (*Rana draytonii*), western pond turtle (*Clemmys marmorata*), and the foothill yellow-legged frog, all special-status species, may utilize the aquatic habitats within the study area.

Special-Status Species

Special-status species include plants and animals in the following categories:

- species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA);
- species considered as candidates for listing as threatened or endangered under ESA or CESA;
- species identified by the California Department of Fish and Game (DFG) as “Species of Special Concern” (a DFG administrative designation used to try to prevent these animals from becoming threatened or endangered by addressing issues of concern early enough to secure long-term viability of the species);
- animals fully protected under the California Fish and Game Code;

[1] Herpetofauna is a classification of animal that includes reptiles and amphibians.

- species protected by the federal Migratory Bird Treaty Act;
- bald and golden eagles protected by the federal Bald Eagle Protection Act;
- species that meet the definitions of rare or endangered under CEQA (Title 14, Section 15380 of the California Code of Regulations [14 CCR 15380]); and
- plants on the California Native Plant Society's (CNPS's) List 1B (plants rare, threatened, or endangered in California and elsewhere) or List 2 (plants rare, threatened, or endangered in California but more common elsewhere).

Seventy-five species were listed by the California Natural Diversity Database (CNDDB) (2009) as occurring in the project region, including 59 plant species and 16 wildlife species. The U.S. Fish and Wildlife Service (USFWS 2009) species list identified seven non-fishery animals and 11 plant species, of which six animals and three plants did not overlap with the CNDDB search. The CNPS search produced 50 plant species, six of which did not overlap with the CNDDB or USFWS searches (CNPS 2007). Of the 68 plant species and 22 wildlife species, 64 plants and seven animals are not expected to occur because of lack of suitable habitat for the species in the area. No additional animals were added from the surveys of Bunnell (1999), as all had been previously reported from the above searches. Thus, a total of four plants and 15 animals have the potential to occur in the study area (see Tables 3.3-1 and 3.3-2). Species that do not have suitable habitat within the study area are not discussed further.

The CNDDB-listed species reports and maps are contained in Appendix F of this EIR. The CNDDB occurrences map includes species occurrence locations within the project region and overlapping 1-, 5-, and 10-mile distances from the study area. Wildlife species are represented by species polygons with species codes and CNDDB occurrence numbers. Plant species are shown as polygons without reference to species. The table in Appendix F presents the species codes and their associated species names.

In the above faunal inventory, certain birds are considered a special-status species only when they are nesting or in a breeding colony or rookery. Examples of these are osprey, herons, and egrets, and the double crested cormorant (*Phalacrocorax auritus*).

Special-Status Plant Species

Neither CNPS (2009) nor CNDDB (2009) reported any occurrences of special-status plant species in the study area and EDAW biologists did not encounter any special-status plant species during the reconnaissance survey. In general, the study area does not provide suitable habitat conditions for most regionally known sensitive plants. However, Table 3.3-1 lists the special-status species of plants that may have suitable habitat in the general region. The study area is naturally disturbed, in that it is largely seasonally riverwashed, and most of the special-status plants are not expected to survive in the annual high flows of the river. The study area contains marginally suitable habitat for Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*), swamp harebell (*Campanula californica*), bristly sedge (*Carex comosa*), and Kenwood marsh checkerbloom (*Sidalcea oregana* ssp. *Valida*). Although these species have very low potential for occurrence, they cannot be ruled out without adequate surveys being conducted. No known surveys to establish these species presence/absence have been conducted within the study area.

Table 3.3-1
Special-Status Plants Potentially Occurring in the Study Area

Species	Status[1]			Flowering Season	Habitat	Potential for Occurrence
	USFWS	**DFG**	**CNPS**			
Plants						
Sonoma alopecurus *Alopecurus aequalis* var. *sonomensis*	FE	–	1B	May–July	Freshwater marshes and swamps and riparian scrub.	Very low; backwaters and riparian scrub in the study area may provide suitable habitat. Fewer than 10 occurrences in the region.
Swamp harebell *Campanula californica*	–	–	1B	June–October	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, freshwater marshes and swamps.	Very low; higher elevation open area wetlands in the study area may provide marginally suitable habitat. Mainly inhabits coastal locations.
Bristly sedge *Carex comosa*	–	–	2.1	May–September	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland.	Very low; wetted soils in low-energy back reaches may provide habitat.
Kenwood marsh checkerbloom *Sidalcea oregana* ssp. *valida*	FE	CE	1B	June–September	Edges of freshwater marshes and swamps.	Very low; wet soils of river and streambanks may provide only ephemeral habitat. Only known from two locations in Sonoma County.

[1] Legal Status Definitions
U.S. Fish and Wildlife Service (USFWS):
FE Federal Endangered
California Department of Fish and Game (DFG):
CE State Endangered
California Native Plant Society (CNPS) Listing Categories:
1B Plants Rare, Threatened, or Endangered in California and elsewhere
2.1 Rare, threatened, or endangered in California, but more common elsewhere. Seriously endangered in California

Sources: CNDDB 2009, USFWS 2009, CNPS 2007

Table 3.3-2
Special-Status Animals Potentially Occurring in the Study Area

Species	Status[1]		Habitat	Likelihood of Occurrence
	USFWS	DFG		
Invertebrates				
California freshwater shrimp *Syncaris pacifica*	FE	CE	Low-gradient and low-elevation smaller streams with moderate to heavy riparian cover in shallow pools away from main streamflow.	Very low; marginal habitat exists in the edges and backwaters of the river; occurrences have been limited to downstream tributaries of the Russian River.
Amphibians				
California red-legged frog *Rana aurora draytonii*	FT	CSC	Streams and ponds, often with emergent or riparian vegetation.	Very Low; not documented in study area, but suitable habitat exists in deep backwaters (breeding) and riparian areas.
Foothill yellow-legged frog *Rana boylii*	–	CSC	Variety of habitats with shallow flowing water, small to moderate sized streams, with some cobble sized substrate and sparse riparian vegetation.	Known to exist; shallow flowing waters and riparian habitat is available. Observed in study area (Bunnell 1999, CNDDB 2009).
Reptiles				
Western pond turtle *Clemmys marmorata*	–	CSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes, and irrigation ditches with basking sites and a vegetated shoreline.	Known to exist; many areas of high quality habitat along the river for foraging, basking and egg laying (CNDDB 2009).
Birds				
Great blue heron *Ardea herodias* (nesting)	–	CSC	Prefers to be near sources of water, including rivers, lake edges, marshes, saltwater seacoasts, and swamps. Colonial nesters in trees or tall bushes.	Moderate; rookeries have been reported downstream. Riparian areas provide habitat for nesting and foraging. Individuals observed by EDAW biologists.

Table 3.3-2
Special-Status Animals Potentially Occurring in the Study Area

Species	Status [1]		Habitat	Likelihood of Occurrence
	USFWS	DFG		
Double-crested Cormorant *Phalacrocorax auritus* (nesting)	–	CSC	Breeding and foraging occurs on rocky coasts, islands, and inland rivers and lakes. Nests in tall trees.	Moderate; riparian areas provide high quality habitat for breeding and foraging. Individuals observed by EDAW biologists.
Cooper's hawk *Accipiter cooperii*	–	CSC	Prefers riparian and oak habitats, but will use a variety of habitats near water.	Known to exist; riparian areas provide high quality habitat for nesting and foraging. Observed in study area (Bunnell 1999).
White-tailed kite *Elanus leucurus*	–	CFP, CSC	Low marsh vegetation, riparian grasslands, and agricultural areas provide foraging, while trees of moderate height offer nesting.	Moderate; riparian woodlands may provide nesting habitat while nearby agriculture can provide foraging areas.
Bald eagle *Haliaeetus leucocephalus*	–	CE CFP	Winters at lakes, reservoirs, river systems, and some rangelands and coastal wetlands. The breeding range is mainly in mountainous habitats near reservoirs, lakes and rivers.	Known to exist; suitable foraging habitat exists; reported observations by Syar and Sonoma County personnel in study area. Not known to breed or nest in project area.
Osprey *Pandion haliaetus* (nesting)	–	CSC	Breeding in ocean shores, bays, freshwater lakes, and larger streams. Builds nests in tall trees.	Known to exist; suitable habitat exists for nesting and foraging in the riparian areas. Observed adjacent to study area (Bunnell 1999).
Vaux's swift *Chaetura vauxi*	–	CSC	Foraging over lakes and ponds near or along the coast. Migrating swifts can be found flying over a range of habitats from grasslands to mature coniferous forests.	Known to exist; limited roosting sites are available in study area. Foraging areas over waters are prevalent. Observed by Bunnell (1999).

Table 3.3-2
Special-Status Animals Potentially Occurring in the Study Area

Species	Status [1] USFWS	Status [1] DFG	Habitat	Likelihood of Occurrence
Yellow warbler *Dendroica petechia*	–	CSC	Summer resident in willow and cottonwood riparian areas virtually throughout California.	Known to exist; cottonwood and willow areas found throughout the riparian zone of the project are of high quality. Observed by Bunnell (1999).
Purple martin *Progne subis*	–	CSC	Inhabits woodlands, low-elevation coniferous forests of Douglas fir, ponderosa pine, and Monterey pine. Nests in tall isolated trees.	Moderate; some moderate-quality habitat exists in taller riparian trees.
Mammals				
Pallid bat *Antrozous palliduss*	–	CSC	Deserts, grasslands, shrublands, woodlands and forests. Mostly common in open, dry habitats with rocky areas for roosting.	Moderate; suitable habitat exists; roosting sites in nearby vineyards and under Geyserville Bridge may provide adequate habitat.
Townsend's big-eared bat *Corynohrinus townsendii*	–	CSC	Humid coastal regions of northern and central California. Roosts in caves, lava tubes, mines, etc.	Moderate; suitable roosting habitat exists under Geyserville Bridge.

[1] Legal Status Definitions
U.S. Fish and Wildlife Service (USFWS):
FE Federal Endangered
FT Federal Threatened
California Department of Fish and Game (DFG):
CE State Endangered
CT State Threatened
CFP Fully Protected (legally protected, no take allowed)
CSC Species of Special Concern (no formal protection)

Sources: CNDDB 2009, USFWS 2009

Sonoma Alopecurus. Sonoma alopecurus is federally listed as endangered and listed by the CNPS as List 1B plant, a rare, threatened, or seriously endangered plant in California and elsewhere. Sonoma alopecurus is a perennial grass, is a member of the grass family (Poaceae) and blooms from May to July. It is found in freshwater marshes and swamps and riparian scrub at elevations from 16–689 feet. This species is known from fewer than 10 occurrences (CNPS 2007) in Marin and Sonoma Counties and none are from the Russian River or higher order rivers. Although potential habitat for this species exists in riparian areas and seasonal wetlands along drainages in the study area, the potential for occurrence is very low.

Bristly Sedge. Bristly sedge is listed by CNPS as a List 2.1 plant, a rare, threatened, or seriously endangered plant in California, but more common elsewhere. This plant lives in habitats of coastal prairies, marshes, and swamps (lake margins), and valley and foothill grassland. CNNDB (2009) reports one occurrence within the region from 1896 on the Russian River near Guerneville, approximately 15 miles south of the study area. In 1993, D. Taylor reported that this downstream site may have been extirpated due to loss of habitat. Although the potential for this species is considered very low, suitable habitat exists. The backwaters of the gravel bars may provide suitable habitat for the bristly sedge.

Swamp Harebell. Swamp harebell is listed by CNPS as List 1B plant, a rare, threatened, or seriously endangered plant in California and elsewhere. It is a rhizomatous herb in the Campanulaceae family that inhabits bogs and fens, closed-cone coniferous forests, coastal prairies, meadows and seeps, north coast coniferous forests, and freshwater marshes and swamps, and flowers from June through October at elevations of 0–1,256 feet. Although most occurrences of this species are coastal, at least one occurrence has been observed in the Warm Springs Dam quadrangle just west of the Geyserville quadrangle, in which the project partially resides. This species occurs within freshwater wetlands that are most commonly found in meadows adjacent to coniferous forests resulting from freshwater seeps or in coastal prairies. Swamp harebell may also be found in other mesic areas. This species has a very low potential to occur in wetlands that may be present on the flood plains in the project area.

Kenwood Marsh Checkerbloom. Kenwood marsh checkerbloom is a federally and state listed endangered plant and listed by CNPS as List 1B plant, a rare, threatened, or seriously endangered plant in California and elsewhere. It is a perennial plant in the Malvaceae family that inhabits freshwater marshes and swamps and blooms from June to September. Occurrences have been described from Knights Valley and Kenwood Marsh in Sonoma County, but none within the Russian River or its tributaries. Although the potential for this species is considered very low, backwater reaches behind gravel bars may provide suitable ephemeral habitat for this species.

Special-Status Wildlife Species

California Freshwater Shrimp. California freshwater shrimp (*Syncaris pacifica*) is endemic to Marin, Napa, and Sonoma Counties and is federally and state listed as endangered. It has evolved to survive a broad range of stream and water temperature conditions characteristic of small, perennial, coastal streams. It has been found in low-elevation (less than 750 feet) and low-gradient (generally less than 1%) streams. Habitat conditions include streams of 12–36 inches in depth, exposed live roots of trees such as alder and willow along undercut banks, and with overhanging woody debris or stream vegetation and vines such as Himalayan blackberry and sedges. These areas may provide refuges from swift currents as well as some protection from high sediment concentrations associated with high stream flows and are usually in waters with very low water velocities (USFWS 1998).

Existing populations are threatened by introduced fish, deterioration or loss of habitat resulting from water diversion, impoundments, livestock and dairy activities, agricultural activities and developments, flood control activities, gravel mining, timber harvesting, migration barriers, and water pollution.

CNDDB (2009) lists two occurrences in the project region, the closer occurring 10 miles from the study area in Franz Creek, a tributary of the Russian River downstream of the project. Marginal refugial habitat may exist in the study area within the Russian River as undercut banks with or without overhanging vegetation and very low water velocities. Occurrences of California freshwater shrimp have not been reported in the main reaches of the Russian River (Cox, pers. comm., 2007) or in streams or tributaries upstream of the study area. Because of the lack of surveys and data that target the presence or absence of California freshwater shrimp in the study area, their presence, although unlikely, cannot be ruled out. Therefore, a very low potential exists for occurrence of the California freshwater shrimp in the study area.

California Red-Legged Frog. The California red-legged frog is a California species of concern and is federally listed as threatened. The California red-legged frog is found in humid forests, woodlands, grasslands, and streamsides with plant cover, most commonly in lowlands or foothills. It is frequently found in wooded areas adjacent to streams. The California red-legged frog is found at elevations from sea level to 8,000 feet. This species is endemic to California and northern Baja California.

Breeding habitat for the species is found in permanent water sources such as lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Mating and egg-laying occurs in permanent bodies of water from late November to April, depending on the location, and lasts for only a week or two. Females lay 750–1,300 eggs in a large gelatinous cluster, which is attached to vegetation beneath the water. The egg mass eventually floats to the surface. Eggs hatch after about 4 weeks. Tadpoles metamorphose in 4–5 months.

Ranges of the California red-legged frog are along the Pacific coast from Mendocino County in northern California south to northern Baja California, and inland through the northern Sacramento Valley into the foothills of the Sierra Nevada. A narrow range overlap with northern red-legged frog occurs north of the study area in Mendocino County; northern red-legged frog is found north of Big River, Mendocino County, while both northern red-legged frog and California red-legged frog are found between Big River and Mills Creek, Mendocino County, and only California red-legged frog occurs south of Mills Creek (Shaffer et al. 2004). No reports in CNDDB (2009) of this frog in the Alexander Valley reach of the Russian River are known, but it is possible that the species uses the riparian habitat for over-summering or as a migration corridor. In addition, any deep, backwater ponds with inundations of greater than 15 weeks may provide the red-legged frog with breeding habitat. California red-legged frog use uplands that provide refuge for the species such as riparian vegetation, active mammal burrows, or any other element that could provide shade, shelter, moisture, or cooler temperatures and have been found up to 30 meters (100 feet) from water in adjacent dense riparian vegetation, for up to 77 days (Rathbun et al.1993). Presence of fishes and herpetofauna (e.g., bullfrogs) that may prey upon California red-legged frog eggs, larvae, and adults reduce the habitat quality of an otherwise suitable location from high to moderate. Even though there have been no documented occurrences of this species in the project area or Alexander Valley, it has been observed in Sonoma County. Because this species has been observed to move long distances and both hydrological connection and moderate quality habitat exists for this species in the project area, there is a very low potential for occurrence.

Foothill Yellow-Legged Frog. Foothill yellow-legged frog (*Rana boylii*) is a California species of special concern and requires shallow, flowing water in small to moderate-sized streams with at least some cobble-sized substrate (Hayes and Jennings 1988). This habitat is believed to favor the laying of eggs and refuge habitat for larvae and young frogs. Foothill yellow-legged frogs are usually absent from habitats where introduced aquatic predators, such as various fishes and bullfrogs, are present. The species deposits its egg masses on the downstream side of cobbles and boulders, over which a relatively thin, gentle flow of water exists. This species starts to breed in March and finalizes metamorphosis by October. Threats to the foothill yellow-legged frog include stream scouring (which may negatively affect frogs in streambed hibernation sites), introduced incompatible aquatic animals, riverine and riparian effects of nonselective logging practices, and stabilization of historically fluctuating streamflows.

CNDDB (2009) lists 32 occurrences of foothill yellow-legged frogs in the Geyserville and eight surrounding USGS quadrangles, with an additional occurrence observed by Bunnell (1999). Of the CNDDB occurrences, 18 are within 10 miles, 10 are within 5 miles, and one occurs within the project area. The occurrence within the project area reported 11 juvenile frogs observed in 2006 on the southeast side of Geyserville Bridge. The foothill yellow-legged frog has been observed in the project area and potential suitable habitat exists in the riverine areas (with cobble and gravel substrates for breeding) and in backwater wetland areas.

Western Pond Turtle. Western pond turtle (*Clemmys marmorata marmorata*) is a California species of special concern. Western pond turtle is generally associated with permanent or near-permanent aquatic habitats such as lakes, ponds, rivers, streams, freshwater marshes, and agricultural ditches. It requires still or slow-moving water with instream emergent woody debris, rocks, or similar features for basking sites. Pond turtles are highly aquatic but can venture far from water for egg-laying. Nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils (Jennings and Hayes 1994). Pond turtles can over-winter in upland sites.

The river, ditches, ponds, backwaters, and marshes throughout the Russian River riparian zone provide potential habitat for western pond turtle. Basking habitat within the Russian River consists mainly of downed trees and logs in depths greater than about 2 feet (Cook and Martini-Lamb 2004). Any basking on gravel bars will probably occur within 10 feet of the water's edge. Potential breeding habitat could occur within the riparian communities and grasslands, mainly on the upper banks of the river that are adjacent to the gravel bars up to 1,500 feet from the active stream. Western pond turtles in the Russian River probably use uplands above the winter flood line for nesting (Cook. pers. comm., 2009). Pond turtle adults may over-winter in uplands up to 500m (1,640 feet) from the active stream in vegetated areas with substrate within which they can be covered, such as leaf litter (Reese and Welsh 1997). There are no documented occurrences of breeding on gravel bars within the Russian River. CNDDB (2009) lists 21 occurrences of western pond turtle, one of which observed 24 turtles in the Russian River within the study area.

Great Blue Heron (nesting). Great blue heron is a California species of special concern when in nesting rookeries. Habitat includes sources of water, such as rivers, lake edges, marshes, saltwater seacoasts, and swamps. They usually nest in tall trees or bushes that stand near water, breeding at elevations of up to 4,500 feet. Although great blue herons have been observed in the study area, rookeries have not been recorded. CNDDB (2009) lists a nesting site on the Russian River in a large Fremont cottonwood, about 3 miles downstream of the study area. Habitat for rookeries, consisting of tall trees at the river's edge, exists in the study area. The potential for rookery occurrence in the study area is moderate.

Double-Crested Cormorant (nesting). Double-crested cormorant (*Phalacrocorax auritus*) is the most numerous and widespread North American cormorant, occurring in large numbers inland and on the coast. The double-crested cormorant breeds from the coast of Alaska and Nova Scotia south to Mexico and the Bahamas. It winters on the coasts from Mexico to southern Alaska. The double-crested cormorant lives in brackish and freshwater habitats on lakes, rivers, swamps, bays and coasts and is a colonial nesting species that nests in tall trees or human-made structures. The double-crested cormorant is protected only when in colonial nesting sites. Although this species has been observed in the study area by EDAW biologists and Bunnell (1999), no colonial nesting sites have been observed or recorded. Habitat, consisting of tall trees at the river edge, for rookeries exists in the study area but potential for rookery occurrence is moderate.

Cooper's Hawk. Cooper's hawks (*Accipiter cooperii*) are listed as a California species of special concern. They are found across the United States, Mexico, and southern Canada, as well as through Central America to Costa Rica. Most western Cooper's hawks winter in Mexico, returning north to nest in April. Nest sites are found on forest edges, near agricultural lands, fields and forest clearings. They feed in open areas and woodlots away from the nest site. Cooper's hawks prey mostly on smaller birds, and to a lesser extent on mammals and amphibians. Deforestation, hunting, and pesticides currently threaten Cooper's hawks in the West. Because of their preference for streamside forests, populations of Cooper's hawks are especially sensitive to agricultural expansion along river bottoms.

CNDDB does not list an occurrence of Cooper's hawk within the study area, although Bunnell (1999) reported observing a Cooper's hawk and stated that the bird was probably locally nesting.

White-Tailed Kite. White-tailed kites (*Elanus leucurus*) are a fully protected species under the California Fish and Game Code. White-tailed kites breed in lowland grasslands, agriculture, wetlands, oak-woodland and savanna habitats, and riparian areas associated with open areas. Foraging occurs in open areas, including grasslands and agricultural areas.

Bunnell (1999) did not observe any occurrences of white-tailed kites in the study area. Embree and Halligan (2006) surveyed the middle reach of the Russian River near the Healdsburg Syar processing plant, approximately 5 miles southeast of the currently proposed study area. The avian survey concentrated on osprey, white-tailed kite, yellow-breasted chat, and yellow warblers as species of special concern. The brief study concluded that there were no bird species of special status in the immediate areas or within 500 feet of the bars to be mined for gravel, although there were multiple inactive nests within the area and a white-tailed kite and osprey were observed just outside of the study area. CNDDB (2009) lists two occurrences within the surrounding region, approximately 3 miles and 8 miles from the study area, with nests on a ridgeline above the Russian River and in oak woodlands a half mile off the river. White-tailed kite has a moderate potential for occurrence within the study area and may nest in riparian wetland or forest habitat.

Bald Eagle. Bald eagle (*Haliaeetus leucocephalus*) is state listed as endangered. It is also protected under the federal Bald and Golden Eagle Protection Act and is a fully protected species under the California Fish and Game Code. The species winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands. The breeding range is mainly in mountainous habitats near reservoirs, lakes and rivers, mainly in the northern two-thirds of the state, in the central Coast Ranges, and on Santa Catalina Island. The bald eagle is a raptor typically associated with aquatic ecosystems, frequenting large lakes, rivers, estuaries, reservoirs and coastal habitats. Bald eagles usually nest in large trees along shorelines and use the same breeding territory year after year, although they may use alternative nests within the territory. Bald eagles occur along the Russian River corridor, usually during winter. County and Syar personnel observed this species in the study area in winter 2006–07 (Peltz, pers. comm. 2007, Dericco, pers. comm. 2007) and confirmed nesting has been observed less than 10 miles away at Lake Sonoma (Callahan 2009).

Osprey (nesting). The osprey (*Pandion haliaetus*) is a California species of special concern. This species feeds primarily on fish, but will also feed on invertebrates and other small vertebrates. The osprey utilizes large trees and snags in forest and riparian habitats for nesting and cover. This species breeds from March to September and nests on platforms of sticks up to 250 feet above ground. Nests are built at the top of snags, human-made structures, dead-topped trees, or similar structures within 15 miles of foraging grounds. Sightings for osprey occur on the CNDDB overlays for the Camp Meeker, Duncan's Mills, and Guerneville Quadrangles. These sightings are mostly confined to a narrow band of habitat along the Russian River.

Although no nests have been recorded within the project boundaries, osprey is known to occur in the study area and was seen by EDAW biologists on the reconnaissance-level survey (May 7, 2007). Bunnell (1999) also reports occurrence of this species and states that nesting probably occurs nearby. CNDDB (2009) reports two occurrences within the project region; the closer is a nesting osprey approximately 3 miles from the project boundaries, downstream in the Russian River.

Vaux's Swift. Vaux's swift (*Chaetura vauxi*) is a California species of special concern. This bird is an uncommon summer resident of coniferous forests of northern California and a common migrant throughout the state. Vaux's swifts nest in hollowed-out trees and snags in heavily forested areas. No nests have been reported near the study area; however, this species is known to breed locally, and confirmed sightings have occurred within the study area (Bunnell 1999). Suitable roosting, breeding, and foraging habitats for this species occur within the study area and surrounding habitats.

Yellow Warbler. The yellow warbler (*Dendroica petechia*), a California species of special concern, uses mainly riparian habitat in the western United States. Characteristics of good yellow warbler habitat include "concealing cover for nesting, tall singing posts, and feeding areas in trees" (Erlich et al. 1988). Willow, alder, and elderberry are typical plant species used by the warbler. Although CNNDB (2009) does not list any occurrences within the region, Bunnell (1999) observed it in the study area.

Purple Martin. Purple martin (*Progne subis*), a California species of special concern, inhabits woodlands and low-elevation coniferous forests of Douglas fir, ponderosa pine, and Monterey pine. This species nests in old woodpecker cavities and occasionally in manufactured structures. Nests are often located in tall isolated snags. The CNDDB (2009) lists only one occurrence of this species in the region, located more than 8 miles from the study area. Although there is a lack of occurrences recorded in the study area, a moderate potential for occurrence exists because suitable habitat exists in tall snags and woodpecker nests in the area.

Pallid Bat. The pallid bat (*Antrozous pallidus*), a California species of special concern, has a large range in western North America, from Canada south to Mexico. It is fairly common in many areas, but regional population trends are poorly known. This bat inhabits open, dry habitats such as deserts, grasslands, and shrub lands with rocky areas for roosting. It also roosts in caves, mine tunnels, crevices in rocks, buildings, under bridges and in trees where the site will protect individuals from high temperatures. These bats are very sensitive to disturbance of roosting sites. Pallid bats forage in open habitats after dusk and prey primarily upon insects on the ground, including crickets, scorpions, beetles, and grasshoppers.

The CNDDB (2009) lists seven occurrences in the project region, with the closest occurrence within 3 miles of the study area. Six of the seven observations occur within 10 miles of the study area. Most observations list building structures associated with vineyards as the roosting sites for the bats. The pallid bat, like other bats, has roosting and maternity site opportunities within the study area, mainly in trees and under the Geyserville Bridge (within the study area) and the Jimtown Bridge (south of the study area). Roosting structures for bats were constructed under both bridges.

Townsend's Big-Eared Bat. Townsend's big-eared bat (*Corynorhinus townsendii*), a California species of special concern, is found throughout western North America, from British Columbia south to Oaxaca, Mexico. Townsend's big-eared bat roosts in caves, mine tunnels, abandoned buildings, and other structures. This bat inhabits a variety of plant communities including coastal conifer and broad-leaf forests, oak and conifer woodlands, arid grasslands, and deserts. It is most commonly associated with moisture-rich sites and is highly sensitive to human disturbances. A single visit by humans can cause bats to abandon roosts.

Townsend's big-eared bat largely preys on moths over open pasture and forest canopy. For females, foraging increases during pregnancy and feeding of young, from one or two foraging bouts per night to three, and the distance traveled also increases, from 0.6 mile to more than 2.4 miles per night. Females form maternity groups in the spring in caves and shelters, where they give birth to a single pup.

CNDDB (2007) lists two occurrences in the region. One of these occurs approximately 8 miles from the study area, while the other occurs more than 8 miles away. Within the study area, habitat exists under bridges, especially in the manufactured bat habitat under the Geyserville Bridge, and in abandoned buildings occurring along the river.

Sensitive Habitats

For the purposes of this EIR, sensitive habitats are defined as those with particularly high ecological values or functions, limited distribution, or are of concern otherwise to federal, state, and/or local resource agencies. Sensitive habitats include those that are of special concern to DFG (e.g., those identified as having high priority for inventory by the CNDDB), or that are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, and/or Section 404 of the Clean Water Act (CWA).

All wetland and riparian habitats in the study area are considered sensitive. Wetland habitats include freshwater wetlands, saltwater marshes, seeps, and seasonal ponded wetlands. Although both freshwater wetlands and seasonal ponded wetlands may potentially occur within the project area, only the freshwater wetlands have been identified thus far. Riparian habitats within the study area include mixed willow, Fremont cottonwood, and mixed riparian woodland.

Wetland Habitats

Freshwater wetlands generally occur near river mouths or adjacent to rivers, lakes, and springs, and are characterized by a year-round water source. Ecosystem functions include removing nutrients and toxins from surface water, producing vegetative and invertebrate forage and dry-season water for wildlife, and serving as breeding areas for wetland associated birds, amphibians, and other wildlife. In the exemplary mapped area (Figure 3.3-1), freshwater marsh exists in locations of the backwaters between the gravel bar and the riparian woodlands, depressions in the gravel bar itself, and generally, at the head of the alcoves. These locations are subject to fluctuating water levels or washing out as the river level rises and falls.

There may be areas outside of this boundary for which a delineation would be necessary. Seasonal wetlands may be present on low-lying terraces near drainages and along irrigation ditches traversing several of the vineyards, but the exact extent of seasonal wetlands in the study area is unknown (jurisdictional wetlands may shift in location or appear or disappear from year to year). Specific areas where wetland delineations may be needed include access roads through riparian areas from the vineyards to the adjacent gravel bars or access roads through wetland areas or around smaller waterways.

Riparian Habitats

The study area is composed almost entirely of riparian habitat, occurring chiefly in and along the margins of the active channel on intermittent and perennial streams. This habitat increases the value of aquatic habitats to fish, amphibians, and invertebrates by providing shade that cools and stabilizes stream temperatures, providing refuge and food sources to a variety of terrestrial wildlife, and providing migration corridors.

B. Regulatory Framework

Riparian areas, wetlands, other waters of the United States, waters of the state, special-status species, and sensitive natural communities are considered sensitive biological resources and fall under the jurisdiction of several federal and state regulatory agencies. Impacts or potential impacts on these resources often require federal, state, and/or local permits, depending on the type and extent of project impacts. For the issuance of permits for actions that would result in impacts on wetlands, waters of the United States, special-status species, or sensitive communities, notification of all or some of the following agencies would likely be required:

- United State Fish and Wildlife Service (USFWS)
- United States Army Corps of Engineers (USACE)
- California Department of Fish and Game (DFG)
- North Coast Regional Water Quality Control Board (North Coast RWQCB)

An overview of the jurisdiction, application requirements, and required permits for each of the above-listed agencies is provided in the following sections.

FEDERAL REGULATORY ISSUES

Federal Endangered Species Act

Pursuant to the ESA, USFWS has regulatory authority over projects that may affect the continued existence of a federally listed threatened or endangered species. Section 9 of ESA prohibits the take of federally listed species; take is defined under ESA, in part, as killing, harming, or harassment of such species. Under federal regulations, take is further defined to include habitat modification or degradation where it actually results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of ESA outlines procedures for federal interagency cooperation and participation in the conservation and recovery of federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with other federal agencies with regulatory authority to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or to destroy or adversely modify designated critical habitat. Critical habitat is any specific area that has the physical and biological features essential to the conservation of a listed species, and that may require special management considerations or protection.

Clean Water Act

USACE regulates the discharge of dredged or fill into waters of the United States under Section 404 of the CWA. Waters of the United States include lakes, rivers, streams, and their tributaries and wetlands. Wetlands are defined under Section 404 as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Activities that require a permit under Section 404 include but are not limited to placing fill or riprap, grading, mechanized land clearing, and dredging. Fill material means material placed in waters of the United States where the material has the effect of replacing any portion of a water of the United States with dry land; or changing the bottom elevation of any portion of a water of the United States. Examples of fill material include but are not limited to rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and material used to create any structure or infrastructure in waters of the United States. Any activity that results in the deposit of dredged or fill material within the OHWM of waters of the United States usually requires a permit from USACE, even if the area is dry at the time the activity takes place. A variety of processes are available for obtaining Section 404 authorization from USACE, ranging from the nationwide permit process to the individual permit process.

Section 401 of the CWA requires an applicant for any federal permit for an activity that may result in a discharge into waters of the United States to obtain a certification from the state that the discharge will comply with provisions of the CWA. The State Water Resources Control Board (SWRCB) and regional water quality control boards (RWQCBs) administer this program. Any condition of a 401 certification (or water quality certification) would be incorporated into the USACE permit. The state has a policy of no net loss of wetlands and typically requires mitigation for impacts on wetlands before it would issue a water quality certification.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, domestically implements a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union that provide for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…” (United States Code Title 16, Section 703 [16 USC 703]). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668–668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald eagles, including their parts, nests, or eggs. The act provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle…[or any golden eagle], alive or dead, or any part, nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." USFWS has defined "disturb" to mean "to agitate or bother a bald or golden eagle to the degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, causing injury, death, or nest abandonment." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

STATE REGULATORY ISSUES

California Endangered Species Act

Pursuant to Section 2081(b) of the CESA, the take of state-listed species incidental to otherwise lawful activities requires a permit. The state has the authority to issue an incidental take permit under Section 2081 of the California Fish and Game Code, or to coordinate with USFWS during the Section 10(a) process to make the federal permit also apply to state-listed species. Under CESA, "take" of a species is not defined the same as in FESA. For example, the definition of take under CESA does not include "harm" or "harass." "Take" is defined as an activity that would directly or indirectly kill an individual of a species.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides the basis for water quality regulation within California (see Section 3.2, "Hydrology and Water Quality," for additional information). This act allows the SWRCB to adopt statewide water quality control plans or basin plans. The purpose of the plans is to establish water quality objectives for specific water bodies. Most of the implementation of the SWRCB's responsibilities is delegated to the nine RWQCBs.

Under the Porter-Cologne Water Quality Control Act, wetlands and drainages that are considered waters of the United States by USACE are often classified as waters of the state as well. However, waters of the state can also include waters that USACE deems to be isolated or nonjurisdictional under Section 404 of the CWA. Impacts on waters of the state are authorized through waste discharge requirements, which typically include mitigation requiring no net loss of wetlands functions and values of waters of the state.

Section 1600 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources is subject to regulation by DFG, pursuant to Section 1601 of the California Fish and Game Code. Section 1602 makes it unlawful for any governmental agency, state or local, and any public utility to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake without first notifying DFG of such activity. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. DFG's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A DFG streambed alteration agreement must be obtained for any project that will result in an impact on a river, lake, or stream.

Sections 1900–1913 of the California Fish and Game Code

Sections 1900–1913 of the California Fish and Game Code codify the Native Plant Protection Act, which is intended to preserve, protect, and enhance endangered or rare native plants in the state. The act directs DFG to establish criteria for determining what native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more cause. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. Under the act, the Fish and Game Commission may adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

Section 3503.5 of the California Fish and Game Code

Section 3503.5 of the California Fish and Game Code states that it is “unlawful to take, possess, or destroy any birds-of-prey in the orders Falconiformes or Strigiformes.” These orders include hawks, owls, eagles, and falcons. The loss of an active nest is considered by DFG to be a violation of this code. This statute does not provide for the issuance of any type of incidental take permit.

Section 15380 of the State CEQA Guidelines

Section 15380 of the State CEQA Guidelines provides that a species not listed on the ESA or CESA may be considered rare or endangered under specific criteria. These criteria have been modeled after the definition in ESA and CESA. Section 15380 was included in the State CEQA Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a candidate species that has not yet been listed by either USFWS or DFG. Thus, Section 15380 provides an agency with the ability to protect a species from a project’s potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Endangered, rare, or threatened species are defined in the Section 15380 of the State CEQA Guidelines as follows:

> (a) “Species” as used in this section means a species or subspecies of animal or plant or a variety of plant.
>
> (b) A species of animal or plant is:
>
> > (1) “Endangered” when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or
> >
> > (2) “Rare” when either:
> >
> > > (A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or
> > >
> > > (B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered “threatened” as that term is used in the Federal Endangered Species Act.

(c) A species of animal or plant shall be presumed to be endangered, rare or threatened as it is listed in:

(1) Sections 670.2 or 670.5, Title 14, California Code of Regulations; or

(2) Title 50, Code of Federal Regulations Sections 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered.

(d) A species not included in any listing identified in subsection (c) shall nevertheless be considered to be endangered, rare or threatened if the species can be shown to meet the criteria in subsection (b).

LOCAL REGULATORY ISSUES

Sonoma County General Plan

Guidelines and policies within the *Sonoma County General Plan* (Sonoma County 1989) seek to protect biological resources. Policies considered during the development of this section of the EIR are as follows.

Goal RC-5: Promote and maintain the County's diverse plant and animal communities and protect biotic resources from development activities.

Objective RC-5.1: Identify and encourage protection of areas with important wildlife habitats and woodland resources.

Goal RC-6: Identify and protect rare and endangered species and their environment.

Objective RC-6.1: Identify the locations of rare and endangered plants and animals.

Objective RC-6.2: Require that any development on lands containing rare and endangered species be done in a manner which protects the resource or mitigates adverse impacts.

Policy RC-6c: Notwithstanding the densities shown on the land use maps, provide for creation of separate parcels of land where necessary to establish sites for the preservation of rare and endangered species and other biotic resources.

Goal RC-8: Encourage effective management of freshwater fishery resources and balance competing agricultural, development, and mining needs with protection of the stream environment.

Objective RC-8.1: Identify sources of sediment and erosion and minimize their impact on local water courses.

Objective RC-8.2: Manage riparian corridors along streams to provide protection for fish habitat.

Policy RC-8c: Design public and private projects to minimize damage to the stream environment and to maintain instream flows.

Policy RC-8d: Avoid substantial alteration of the stream channel and riparian vegetation in the design of flood control projects on streams with substantial natural areas.

Tree Protection and Replacement Ordinance of the Sonoma County Code

Article 88, Ordinance No. 4014 of the Sonoma County Code describes certain native trees of value (those greater than 9 inches in diameter at breast height [dbh][2]) and attempts to preserve these trees on land where a private project is proposed and development approval is required by specified Sonoma County departments or agencies. This ordinance does not apply, however, to trees that are subject to a valid state timber harvesting permit. In addition, valley oak (*Quercus lobata*) shall receive special consideration in the design review process to the extent that mature specimens shall be retained to the fullest extent feasible. All trees to be replaced shall be the same native species as that removed while consulting the Arboreal Tree Value chart in Ordinance No. 4014 unless specific approval has been granted by the director of the Sonoma County Permit and Resource Management Department (PRMD). Protected trees (greater than 9 inches in dbh) are defined by the Sonoma County Code (Chapter 25, Article 1, Section 25-2):

> "Protected tree" means Big Leaf Maple *Acer macrophyllum*, Black Oak *Quercus Kelloggii*, Blue Oak *Quercus Douglassi*, Coast Live Oak *Quercus agrifolia*, Interior Live Oak *Quercus Wislizenii*, Madrone *Arbutus Menziesii*, Oracle Oak *Quercus morehus*, Oregon Oak *Quercus Garryana*, Redwood *Sequoia sempervirens*, Valley Oak *Quercus lobata*, California Bay *Umbellularia California*, and their hybrids.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

- have a substantial adverse effect, either directly or through habitat modification on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFG or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by DFG or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

[2] Diameter at breast height (dbh) is defined as the outside bark diameter at 4.5 feet above the ground floor.

PROGRAM IMPACTS

The proposed mining plan requires an amendment to the 1994 ARM Plan and related mining ordinance to allow a different method of mining, waiver of mitigation fees, and changes to other standards to allow enhancement features. Changes to the ARM Plan/mining ordinance standards would be effective upon approval and would remain in place after project approval The following discloses, analyzes, and mitigates impacts to vegetation and wildlife resources arising from the proposed changes to the ARM Plan and mining ordinance. Identified mitigation measures would be incorporated into the ARM Plan and ordinance standards.

Findings of the ARM Plan PEIR

The ARM Plan PEIR evaluated potential vegetation and wildlife impacts in Section 8.6, "Vegetation and Wildlife." The PEIR determined that instream operations would create short-term habitat losses during mining and long-term losses if the same zones are continually mined. The PEIR mitigated short- and long-term impacts by requiring implementation of standard mitigation and reclamation plan requirements, mining standards, off-site mitigation measures, and contribution towards the Russian River Gravel Mitigation Fund Stream Restoration Program. These measures were incorporated into the ARM Plan policies and Surface Mining and Reclamation Ordinance (SMARO). The PEIR determined that these mitigation measures would reduce instream mining impacts on biological resources to less-than-significant levels.

Impact 3.3-1 The proposed outer bank setback is not sufficient to prevent disturbance or removal of riparian vegetation at the secondary channel or toe of the outer banks.

The existing ARM Plan and mining ordinance require that mining be set back from the outer bank 2.5 times the height of the bank or 30 feet, whichever is greater, as measured from the top of the outer bank. This setback has not often proven a substantive limitation on past mining projects because the 2% cross-slope standard often did not allow bar skimming near the outer bank. The project proposes an exception to the 2% cross slope standard, and would thus enable mining to encroach upon the secondary channel or toe of the outer bank slope, potentially impacting existing riparian vegetation, including some of the more mature riparian vegetation in the project area.

Mitigation Measures

3.3-1 Revise the ARM Plan and mining ordinance to require the outer bank setback be measured from the <u>toe</u> of the outer bank slope and include the dripline of any existing riparian vegetation. This measure is identical to Mitigation Measure 3.2-4 in Section 3.2 "Outer Bank Buffers."

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.3-1 would reduce the impact of the outer bank setback to less-than-significant levels.

Impact 3.3-2 The proposed ARM Plan amendment to allow waiver of the established Russian River Gravel Mitigation Fund impact fees based on an Enhancement Plan could reduce mitigation requirements.

The ARM Plan PEIR recognized the potential for mining to impact riparian resources and required all instream operators to contribute to a new Russian River Gravel Mitigation Fund to mitigate these potential long-term effects. The fund addressed four specific programs for mitigation of long-term cumulative impacts, including: agricultural support; recreation enhancement; flood protection; and stream restoration. However, the ARM Plan also acknowledged that disputes regarding potential project impacts could be raised during County permit proceedings, and allowed for the board of Supervisors to make adjustments to the mitigation fee charges based on annual reports or other information demonstrating reduced impacts. Syar has proposed a more comprehensive River Enhancement Plan and therefore requests a waiver of the fees for past mining activities as well as the current project. The proposed ARM Plan changes would allow a fee waiver based on the approval of an Enhancement Plan incorporated into the Reclamation Plan.

To date the fund has not generated sufficient funds to implement any substantial stream restoration work, although the portion of the funds for fish barriers and recreation impacts have been used to construct the fish ladder installed in Healdsburg just below Memorial Beach, and acquire public access at Salmon Beach near Rio Nido. Furthermore, the cost of construction has increased substantially since the fee was adopted. The fee does not include the cost of planning, design, environmental review, and permitting (which can be as much as 20% of the total construction costs).

The proposed River Enhancement Plan or any future enhancement plan associated with future mining permits or permit renewals would be implemented as part of the mining permit approvals, and provide a more immediate mitigation than the ARM Plan program. However, the proposed amendment does not yet include any standards for the restoration work, or a monitoring program, performance criteria or financial assurance to ensure the success of the enhancement program.

Future enhancement activities may therefore result in potentially significant impacts to vegetation and wildlife.

Mitigation Measures:

3.3-2 Restoration Standards: During the life of the permit, the operator shall plant enhancement areas totaling at least 25% of the area of disturbance on the mined bars and access down the bank. Planting density for native riparian restoration, typically willow stakes, cottonwood trees, grasses, and sedges, shall be a minimum of 200 - 600 trees per acre from cuttings and native seed stock collected and grown from the local area, and shall achieve the required performance criteria in five years.

Monitoring: Riparian plantings shall be monitored annually for 5 years or as determined necessary by PRMD in consultation with the SRC and resource agencies.

Performance Criteria: At the end of the five year monitoring period, the planting area must show a minimum of 60% canopy cover. Areas that do not achieve this criterion shall be replanted until the success criteria are met or adjusted through Adaptive Management.

Adaptive Management Strategy: Where restoration is occurring in areas cleared of invasive species, increased planting density may be required. If planting is occurring on terraces over 5 feet above the low-flow water surface elevation, irrigation may be needed during the initial period.

Financial Assurance: The REP shall be incorporated into the Reclamation Plan and will require financial assurances to be posted and updated annually.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.3-2 would reduce the potential of the ARM Plan amendment to impact vegetation and wildlife resources, and would provide a potential beneficial impact by increasing the area, extent, and performance of proposed riparian restoration activities.

Impact 3.3-3 The proposed ARM Plan amendments to allow revised mining methods and enhancement activities could result in the removal or disturbance of special-status or protected species.

The ARM Plan PEIR identified the potential to impact special-status species, and the mining ordinance requires avoidance of special status species. However, neither the ARM Plan nor mining ordinance require surveys for special status or protected species prior to commencement of mining or enhancement activities, or specify measures to mitigate impacts. Impacts to special status species include modifications of their habitats or disturbance during any portion of their life cycle. This is a potentially significant impact.

Mitigation Measures.

3.3-3 **Revise the Mining Ordinance to Require Surveys of Special Status or Protected Species.** Prior to commencement of mining or construction of enhancement features, the operator shall hire a qualified biologist to conduct surveys for current special status or protected species in the affected area and within 500-feet including:

- Special status plant species during their flowering season
- Special status animal or aquatic species and their habitats
- Nesting birds or roosting special status bats
- Trees larger than 9-inches in diameter at breast height (dbh)
- Jurisdictional wetlands

Special status and protected species shall be avoided to the maximum extent feasible. Areas to be avoided shall be protected with fencing. Workers shall attend training with a qualified biologist to review any sensitive areas or mitigation requirements. If avoidance is not feasible, then a mitigation plan shall be submitted for review and approval of PRMD in consultation with the SRC and resource agencies and all required permits from the agencies shall be obtained. Wetland impacts shall require mitigation at a minimum 2:1 ratio or greater depending on the habitat values in conformance with the County's General Plan.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.3-3 would reduce the potential to impact special status or protected species to a less-than-significant level.

PROJECT IMPACTS

There is no adopted habitat conservation plan, natural community conservation plan, or other approved state, regional, or local habitat conservation plan for the study area. Thus, the project would not conflict with any of these plans and no further discussion is required. A discussion of impacts on fisheries is provided in Section 3.4, "Fisheries Resources," of this EIR. This EIR recognizes that the current vegetation on each bar is highly dynamic and could change over the 15-year use permit period. The EIR thus evaluates the potential on each bar for the type of biological resources evaluated. A representative section of river, including the downstream half of gravel Bar S-7, the upstream portion of Bar S-5, and the full extent of gravel Bar S-6 is presented to show the possible habitats that could exist within the study area (Figure 3.3-1). The potential for impacts on biological resources and mitigation measures is provided below.

Impact 3.3-4 The project could result in the removal or disturbance of special-status plant species.

Operation of large machinery, installation of temporary bridges, and the skimming of aggregate through both mining and REP activities may affect special-status plant species through direct or indirect destruction of plants. Because no known special-status plant surveys have previously been conducted for those species listed in Table 3.3-1 above, the possibility of their occurrence within the mining sites, access roads, and other areas potentially disturbed by mining-related activities, though very low, cannot be ruled out. Plant surveys would be required during the flowering periods, as identified in Table 3.3-1, to determine their presence and/or absence. The potential to remove or disturb special-status plant species would be a potentially significant impact.

Mitigation Measures

3.3-4 **Conduct Special-Status Plant Surveys Before Mining.** The operator shall conduct special-status plant surveys at the proposed mining site, including the vegetated portions of the access routes, before any mining-related activity commences. These surveys shall be conducted by a qualified biologist during the flowering period for each special-status species. Surveys may be conducted within 5 years of the start of mining activities at a given bar, but all surveys must be complete prior to the start of mining activities.

If no special-status plant species are found to inhabit the site, no further mitigation measures would be necessary.

If special-status plants are discovered in the proposed mining site and/or access area, individuals shall be clearly marked and avoided to the extent feasible. If special-status plants found during focused surveys cannot be completely avoided, consultation with DFG, USFWS, or both shall be initiated, depending on the listing status of the plant. During this consultation, a mitigation plan shall be developed and approved by the relevant agencies to avoid all adverse impacts. This plan shall include worker education and erecting protective fencing (for indirect impact). The plan may also include locating and enhancing another off-site population of the species, or transplanting the population to suitable nearby habitat. Criteria for plant population survival and transplantation methods and success shall be specified within the mitigation plan. Mining activities shall not commence until the mitigation plan is in place.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.3-4 would reduce the impact on special-status plants to a less-than-significant level.

Impact 3.3-5 Project and river enhancement plan (REP) activities could result in direct take or indirectly affect special-status aquatic species. Indirect affects would result from the loss of quantity and quality of habitat in the Russian River, wetland ponds, and backwaters of gravel bars for these species.

Four special-status aquatic wildlife species have varied potentials for occurrence in the study area, being both very low (i.e., California freshwater shrimp and California red legged frog) and known (foothill yellow-legged frog and western pond turtle) (see Table 3.3-2). California red-legged frog, foothill yellow-legged frog, and western pond turtle have potential to occur in both the aquatic and terrestrial habitats, while freshwater shrimp may only occur in the aquatic habitat. Because species may share habitats and impacts to all species in a given habitat are similar, the impacts will be discussed in relation to the particular habitat.

Both direct and indirect impacts on aquatic special status species have the potential to occur in the terrestrial and aquatic habitats. Aquatic habitat includes submerged portions of backwater ponds, inlets, and the river itself. The terrestrial area includes all other portions of the project site including the gravel bars, riverbanks, and uplands.

Direct Aquatic Impacts

Direct impacts may include the crushing or smothering of special-status animals occurring in the waters adjacent to the gravel bars and/or the riverbanks being mined, stabilized, or restored. Activities that occur in the wetted stream are generally limited to the installation of river crossings, alcove plug removals, and bank stabilizations during REP efforts. These activities involving operations and movement of heavy equipment could result in mortality or injury to all special-status animals by crushing under heavy machinery or restoration construction materials such as rip rap, log debris jams and large woody debris (LWD)[3], or smothering with aggregates.

Indirect Aquatic Impacts

Indirect impacts include the release of new pollutants and sediments into the aquatic habitat, the loss of LWD and riparian vegetation, increased predation on the special-status species, and alteration of the physical features and hydrology of the habitat.

Pollutant releases, such as oil from machinery or gasoline spills, can vary in effect on aquatic animals. Releases could cause acute and chronic toxicity to aquatic organisms and adversely affect the reproductive ability of shrimp and frogs. Immediate mortality could result with the release of highly toxic chemicals or extensive release of chemicals with lower toxicities. Moderate effects such as decrease in essential body functions and reproductive failure lead to population decreases. All the special-status aquatic animals with potential for occurrence could be negatively affected by a variety of pollutant releases.

[3] Large woody debris (LWD) is commonly defined by biologists as wood with a minimum of 4 inches in diameter and at least 6 feet long that protrudes into the stream channel.

Increased loads of aquatic sediment could result from the mobilization of exposed sediments during high stage river flows during and after mining. These fine sediments would be exposed in the mining process from the removal of larger aggregates that armor the bars. Increased sediment loads may last for more than a single flood event and be the prevalent source of increased sediments in the river adjacent to and downstream of the mining site. Runoff of sediment-laden waters into aquatic habitats from activities on higher grounds could also result in high sediment loads in the receiving waters during and slightly after rain events. Increased sediment due to runoff would be intermittent and of less overall magnitude than that due to removal of armoring. Minor roiling[4] of the river may occur when equipment enters the wetted stream during installation and removal of the temporary bridges and REP activities. Additional minimal and short-term suspended sediments may result from accessing gravel bars with heavy machinery. Increases in suspended sediment could decrease the water quality for aquatic species by limiting the clarity of the water, affecting any activity dependent upon sight, such as foraging or escape from predators. Suspended sediment may also alter oxygen diffusion rates, especially among early life stages of frogs (i.e., eggs and tadpoles), causing suffocation. Increases in sediment load could also cause deposition of sediments and fill in still waters such as ponds or alcoves, changing the physical character of that water body (see physical structure changes below).

Syar proposes to conduct bar skimming and proposed enhancement activities in the dry season from June 1st to November 1st, outside the wetted stream and above the summer low-flow channel of the Russian River, thus limiting erosion potential and sediment discharge into the river. Syar would also implement BMP's to minimize erosion at access roads and staging areas (see Chapter 1, Introduction and Project Description). Furthermore, bridges would be in place from June 15th to October 15th to limit disturbance within the active river, consistent with County regulations regarding the placement of crossings

Loss of LWD and riparian vegetation that overhangs and/or grows into the river could temporarily reduce potential breeding and rearing habitat for foothill yellow-legged frog and degrade habitat for other aquatic species such as California red-legged frog and California freshwater shrimp. Loss of LWD near the wetted stream would also reduce the basking habitat utilized by western pond turtle. Although many areas in this reach of the Russian River have suitable overhanging vegetation, such vegetation usually occurs on the undercut bank of the river opposite the gravel bars in areas not subject to mining. On the gravel bars proposed for mining, overhanging vegetation generally occurs at the head of the bar and/or the tail of the bar near the backwater alcoves when present.

Changes to the physical structure of or increased flow to an aquatic habitat can cause habitat loss. Increase of sediments can change the substrate composition that species such as foothill yellow-legged frogs prefer for breeding. Great amounts of sediment input can sufficiently change the depth of an aquatic habitat and reduce the number and volume of ponds that the special-status aquatic species will refrain from using the habitat. For instance, western pond turtle prefer ponds at least 3 feet deep and 3 feet wide. Activities that cause an increase in water flow may also decrease habitat value for foothill yellow-legged frog, California red-legged frog and the California freshwater shrimp as these species prefer habitats of low flow.

[4] Roiling occurs when sediment in a river has been stirred up and is in a turbulent state.

Direct Terrestrial Impacts

Direct take could result from operations and movement of heavy equipment, haul trucks, and other vehicles on, into, and out of the mining sites. These operations include both mining and REP activities, such as skimming and transferring and stockpiling of materials, loading haul trucks, accessing gravel bars, installation of river crossings, installation of riverbank protections, and placement of LWD.

California red-legged frog, foothill yellow-legged frog and western pond turtle may utilize terrestrial portions of the project site. If present, all three species are expected to bask and/or forage within 15 feet of the active stream; foothill yellow-legged frog would not utilize the terrestrial portions further from the active stream. The remaining two species chiefly use gravel bars only for traversing to uplands or alternate habitat and rarely occupy areas with a bare gravel substrate for long periods. Both species are known to use other uplands for longer periods.

California red-legged frog may use dense riparian vegetation of uplands for foraging and resting for extended periods. Additionally, California red-legged frogs that reside in permanent creeks or rivers have been observed to migrate in straight lines over a mile towards breeding ponds without regard for habitat type. Although this species may be found anywhere across the project site during such migrations, these movements usually occur during or after rains, and thus should not be impacted during the mining season.

Western pond turtle may utilize uplands for overwintering and nesting. Nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils (Jennings and Hayes 1994). Nests may be laid as early as June and remain occupied by hatchlings through at least March of the following year. Pond turtle adults may access uplands at all times of the year and over-winter in uplands up to 500m (1,640 feet) from the active stream in areas with substrate within which they can be covered (e.g., leaf litter). Western pond turtle eggs are laid in uplands from April to August and emerge the following spring. Turtle nests could be affected if the access roads were constructed during this period and by vehicles accessed the gravel bars via these access roads. Direct impacts in the terrestrial areas would thus be very rare, and limited to construction of vehicle impacts on any frogs and turtles that move into areas of mining and traffic.

Indirect Terrestrial Impacts

Indirect impacts in the terrestrial habitats could occur from the attraction of predators to the mined site. These predators may be attracted by project activities increased presence of trash, which could result in increased predation pressures on amphibians and reptiles.

Project Activities That Reduce Impacts

Syar has identified various mining methods (i.e., horseshoe skim and effective discharge stage height [EDSH]) and operating standards (buffers at the head and sides of bar and best management practices [BMPs] to reduce sedimentation into the active stream) that would avoid or reduce the impacts on aquatic animal habitats and wetlands and waters of the United States. The implementation of oxbows and alcoves as part of the REP activities has the potential to create additional wetland habitat, a beneficial impact. In addition, the riparian forest planting component of the REP activities would provide future overhanging vegetation for the creation of additional beneficial riverine aquatic habitat. However, additional mitigation measures would be necessary to fully reduce potential impacts on these habitats and the species that occur within them.

Mitigation Measures

3.3-5a **Educate Mining Personnel on Special-Status Species.**

A worker environmental awareness program shall be conducted annually by a qualified biologist to provide mining personnel with information on their responsibilities with regard to the western pond turtle, California red-legged frog, and foothill yellow-legged frog. At a minimum, the training shall describe the species and their habitats, the importance of the species and their habitats, measures that are being implemented to conserve these species, and the boundaries within which mining and enhancement activities would occur.

3.3-5b **Survey Site for Western Pond Turtle.**

Prior to mining or enhancement activities in areas with potential habitat, the operator shall annually survey potential western pond turtle habitat within two days of the commencement of project activity for western pond turtle adults, juveniles, and nests. Nesting sites containing eggs or hatchlings may be immediately adjacent to wetlands or extend up to 1600 feet away from wetland areas in open grassland uplands. Adults and subadults may utilize any portion of the mining sites, including the aquatic habitat, basking sites near or on the edge of river, and accessible terrestrial habitats between the river and the agricultural fields.

If no western pond turtles or nests are observed in potential habitat, mining and REP activities may proceed.

If western pond turtle nests are found, a buffer area of 50 feet shall be established around the nesting site until the turtles are no longer occupying the nest. These buffers shall be indicated by temporary fencing.

If western pond turtle adults or subadults are found either during the surveys or thereafter, the turtle(s) must be allowed to move out of the project area on thier own, or a DFG-approved biologist shall move the turtle(s) to the nearest suitable habitat at least 300 feet outside the active mining area.

A qualified biologist shall be present at active work sites until the initial habitat disturbance has been completed. A qualified biologist shall be on call and capable of responding to the work site to determine the presence of western pond turtle and relocate turtles as needed. The operator shall designate a person to monitor on-site compliance with all mitigation measures. The DFG-approved biologist shall ensure that the monitor receives proper training. The on-site monitor shall check daily for animals under any equipment as well as in the construction area and access route prior to the start of mining or REP activities for that day.

3.3-5c **Survey Site for Foothill Yellow-Legged Frog**

A pre-construction survey shall be conducted within two days of mining or enhancement activities that occur in areas with potential foothill yellow-legged frog habitat. A qualified biologist shall survey for adults, tadpoles, and egg masses. Habitat to be surveyed shall include those aquatic features and areas within 15 feet of any mining or enhancement activities.

If foothill yellow-legged frog are not observed in potential habitat, mining and REP activities may proceed.

If foothill yellow-legged frog egg masses are found, a buffer area of 50 feet shall be established around the area of occurrence and CDFG shall be notified. Buffers shall be indicated by temporary fencing.

If foothill yellow-legged frog adults or subadults are found either during the surveys or thereafter, the individuals shall be allowed to move out of the area on their own prior any further mining activity within 100 feet of the animals location. Alternatively, a DFG-approved biologist may move the frog(s) to the nearest suitable habitat outside the active mining area prior to mining activities.

A qualified biologist shall be present at active work sites until the initial habitat disturbance has been completed. A qualified biologist shall be on call and capable of responding to the work site to determine the presence of foothill yellow-legged frog and relocate frogs as needed. The operator shall designate a person to monitor on-site compliance with all mitigation measures. The DFG-approved biologist shall ensure that the monitor receives proper training. The on-site monitor shall perform a daily check for frogs within the construction area and access route within 30 feet of aquatic habitat prior to the start of mining or REP activities for that day.

3.3-5d **Survey Site for California Red-Legged Frog**

A pre-construction survey shall be conducted within two days of mining or enhancement activities that occur in California red-legged frog habitat or other activities that may result in take of the species. A qualified biologist shall survey all aquatic features, the perimeter around those aquatic features, and densely vegetated riparian portions of the project site.

In the unlikely event that California red-legged frog is found during the preconstruction survey, the biologist will contact the USFWS and CDFG immediately. All mining shall cease until authorization from USFWS and CDFG is granted and the operator implements all measures identified by the agencies to avoid all adverse impacts to the California red-legged frog.

3.3-5e **Survey Site for California Freshwater Shrimp.**

A pre-construction survey shall be conducted within two days of mining or enhancement activities that occur in California freshwater shrimp habitat or other activities that may result in take of the species. A qualified biologist shall identify and survey areas of possible California freshwater shrimp habitat within 100 feet of proposed mining or enhancement areas, especially those areas that have vegetation overhanging undercut river banks and posed above nearly still water bodies.

In the unlikely event that California freshwater shrimp is found during the preconstruction survey, the biologist will contact the USFWS and CDFG immediately. All mining shall cease until authorization from USFWS and CDFG is granted and The operator implements all measures identified by agencies to avoid all adverse impacts to the California freshwater shrimp.

3.3-5f **Remove Trash that May Attract Predators.** During work activities, all trash that may attract predators shall be properly contained, removed from the worksite, and disposed of daily. Following mining activities, all trash and debris shall be removed from work areas.

3.3-5g **Update the Spill Prevention Fueling and Lubrication Plan.** See Mitigation Measure 3.11-1 in Section 3.11, "Hazards and Hazardous Materials." Implementation of that mitigation measure shall be applied to this impact.

Impact Significance After Mitigation

Implementation of Mitigation Measures 3.3-5a through 3.3-5g would reduce the impact to the above special-status aquatic species to a less-than-significant level.

Impact 3.3-6 The project could temporarily diminish the habitat quantity and quality for nesting and migratory special-status bird species.

Mining and enhancement activities involving heavy machinery would cause noise and other disturbances that could degrade the habitat quality for nesting of special-status birds during the year that bar was mined. Nest disturbance or abandonment could result in the loss of eggs or death of these bird species for the mining season. These birds can move between nest locations from year to year; therefore, the potential effects of mining on the nesting pair may depend on whether active nesting exists and where it is located during the mining period. Nesting habitat would be temporarily diminished by the project if habitat were removed. Foraging habitat for these birds would also likely be diminished or removed during the mining season by direct removal and by mining activity disturbance on the bars, but not permanently. As part of the REP, Syar proposes to replant more than 11 acres with riparian vegetation, some of which would be trees. It is expected that this habitat enhancement would offset vegetation that is removed from mining or enhancement activities but would take time to mature to the point of that vegetation that was removed. In addition, Syar proposes to move large stands of vegetation from the skimming areas to the heads and edges of bars. These actions, in coordination with the adaptive management strategy (AMS), would offset losses of habitat, described above, over time.

Mitigations for the project require pruning and the potential removal of vegetation, as listed in the Section 3.6, "Traffic and Circulation". This vegetation pruning and potential removal could both degrade and remove habitat for nesting of special-status birds. This impact is limited and temporary since removal of vegetation would occur only for those mining seasons that the particular haul route is active.

Temporary losses of habitat from mining would be limited to the active bars for that year (up to four in a season) and not extend to the nearby bars and adjacent areas that provide abundant avian habitat. This impact on the mining bars, access to the mining bars, and on haul routes would be potentially significant.

Mitigation Measures

3.3-6 **Survey for Special-Status Birds and Establish Buffer if Necessary.** Before mining activities commence, the following measures shall be implemented for nesting birds. The operator shall prune, remove, or transplant vegetation after September 1 and before February 15 of any mining year, when bird nesting is most likely avoided. If this is not feasible, then a qualified biologist shall survey the proposed mining area and access routes before commencement of mining activities to verify the presence or absence of nesting birds. Areas where vegetation may be removed along haul routes shall also be surveyed. The survey distance is 500 feet from the mining area for nesting raptors and 250 feet for special-status bird species. If nesting birds are not found, no further action shall be necessary.

If the survey indicates the potential presence of nesting birds, The operator shall contact DFG to establish a buffer around the nest tree. Buffers shall include a minimum exclusion buffer of 25 feet for songbird nests, and 200–500 feet for raptor nests, depending on the species and location. Buffer zones shall remain until young have fledged. If it appears that mining activities may cause nest abandonment, mining activities must cease until either the young are able to fly well enough to avoid mining areas or consultation with DFG has determined alternative measures.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.3-6 would reduce the impact on special-status birds to a less-than-significant level.

Impact 3.3-7 Project mining activities could diminish habitat quantity and quality for special-status bat species.

Pallid bat and Townsend's big-eared bat have been reported within the project region. Additionally, artificial bat roosts have been installed underneath the Geyserville Bridge upstream of Bar S-8. On other bars within the study area, bats may use large trees located mainly at the high-bank setback edge of the gravel bars and along access routes through riparian habitats. Mining activities could cause bats to abandon their maternity roosts and young. Potential direct impacts on special-status bats include removal of habitat and roost sites during tree removal activities. Indirect impacts include increased noise and human presence during mining activities. These impacts would be potentially significant.

Syar proposes via the REP to replant more than 11 acres with riparian vegetation, including trees. It is expected that this habitat enhancement would offset trees that would be removed from mining or enhancement activities. In addition, Syar proposes to move large stands of vegetation from the skimming areas to the heads and edges of bars. These actions, in coordination with the AMS, would offset those losses of habitat for bats. Temporary losses of habitat would be limited to the active bars (up to four in a season) and not extend to the bars and adjacent areas that provide abundant bat habitat.

Mitigation Measures

3.3-7 **Survey for Roosting Special-Status Bats.** Before removing any trees greater than 12 inches in diameter (dbh), a qualified bat biologist shall conduct a survey for roosting pallid and Townsend's big-eared bats. If mining activities would occur near the Geyserville Bridge or travel under the bridge would be required to access the proposed mining site, bat surveys shall be conducted. In addition, surveys shall be conducted at any other structures that may be bat roosting sites closer than 200 feet from any mining activity.

If no active roosts are found, no further action would be warranted.

If a maternity roost is located, the qualified bat biologist shall delineate a 200-foot buffer zone around the roost. If active maternity roosts or hibernacula are found, the project shall be redesigned to avoid the loss of the tree occupied by the roost if feasible. DFG shall also be notified of any active nurseries in the mining zone. If either a maternity roost or hibernaculum is present, the following additional measures shall also be implemented:

If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree, removal of the tree shall commence only before maternity colonies form (i.e., before March 1) or after young are flying (i.e., after July 31), and not actively using the roost

If a nonbreeding pallid or Townsend's big-eared bat hibernacula is found in a tree scheduled to be removed, the applicant will apply for a memorandum of understanding (MOU) with DFG. The bats shall be safely evicted within the guidelines of the MOU under the direction of a qualified bat biologist by opening the roosting area at dusk to allow air flow through the cavity, or by an alternative measure that does not result in adverse impacts. Tree removal shall then follow no later than the following day (i.e., there would be not less than one night between initial disturbance for airflow and the removal). This action should allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.3-7 would reduce the impact on bats to a less-than-significant level.

Impact 3.3-8 The project could result in the loss of naturally occurring riparian vegetation habitat on the portions of the gravel bars and floodplains that would be skimmed, and the access to those areas.

The project would potentially remove riparian vegetation from any proposed benching areas and the downstream two-thirds of the mined gravel bars, as well as any riparian vegetation in access areas. The mining, skimming, and transportation of heavy equipment would physically remove any growing vegetation within the mining area. All bars in this reach of the Russian River have riparian vegetation communities that would be affected by mining operations. Under the AMS, Syar would delineate large stands of native riparian vegetation within the proposed extraction footprints. Large stands of mature native riparian vegetation (greater than 100 square feet with at least 25% of the stems greater than 1 inch dbh) would be avoided or transplanted according to an approved planting plan. Where transplanting would occur, existing riparian vegetation would be relocated onto the head of the bar, to high-bank setback areas, and to areas of bench enhancements, including portions of those bars that are cleared of invasive vegetation species. In addition, Syar would supplement the transplanting approach with pole plantings and other methods, if determined necessary through the AMS. Transplanting of riparian vegetation would occur during the mining season before the actual skimming operation. Syar would cut and place willow stakes during the winter season to improve revegetation success (i.e., willow stakes would be cut in the appropriate season and kept in cold storage for planting on-site in the appropriate late winter season while the water table is still high). Syar proposes to replant more than 11 acres with riparian vegetation as part of the REP. It is expected that this habitat enhancement would offset trees that would be removed from mining or enhancement activities. In addition, Syar also proposes to move large stands of vegetation from the skimming areas to the heads and edges of bars. Although these actions, in coordination with the AMS, would offset long-term losses of riparian vegetation habitat, temporary losses of habitat would occur on the active bars (up to four in a season) and last until the replanted vegetation reaches the maturity of the habitat originally removed.

In accordance with the AMS, if considerable stands of native riparian vegetation that have been retained within the extraction footprint from the previous mining year are lost in the following winter's runoff events, a revegetation plan would be developed and implemented after consultation with DFG and PRMD.

Syar has identified various mining methods, operating standards (setbacks associated with skimming methods and transplantation after plant removal), and the AMS to avoid or reduce impacts on native riparian vegetation. However, this impact would be potentially significant.

Mitigation Measures

3.3-8 **Supplement the AMS for Riparian Vegetation.** Syar shall delineate significant stands (greater than 100 square feet with at least 25% of the stems greater than one inch in diameter at breast height) of native riparian vegetation within the proposed extraction footprints on their mining plans and shall either adjust the extraction boundaries to avoid disturbance or transplant to suitable locations identified in their annual mining plans. Transplantation and/or revegetation must take place in locations where (1) the riparian forest is less than 100 feet wide, (2) where suitable conditions exist and habitat functions and values can be restored, (3) in areas where invasive vegetation has been removed and conditions are sufficient for growing native riparian vegetation or (4) where bank stabilization is desired and approved by the agencies. Planting density for native riparian restoration, typically willow stakes, cottonwood trees, grasses, and sedges, shall be a minimum of 200 - 600 trees per acre from cuttings and native seed stock collected and grown from the local area.

Monitoring: Transplanted and riparian vegetation shall be monitored for a period of 5 years or until success criteria are met.

Performance Criteria: All plantings (transplants and new plantings) shall be maintained as necessary during the monitoring period to provide 60% canopy cover.

Impact Significance After Mitigation

Implementation of the AMS and Mitigation Measure 3.3-8 would reduce the impact on naturally occurring riparian vegetation to a less-than-significant level.

Impact 3.3-9 The project could result in the loss and degradation of and temporary degradation to waters[5] of the United States and of the state.

Project activities may result in the placement of temporary fill within potential jurisdictional waters of the United States and the state. Aggregate and topsoil would be temporarily stockpiled within the riverbanks on the gravel bars, and temporary access routes on the floodplain terraces would be constructed to access the gravel bars.

Mining- and enhancement-related activities could temporarily diminish the habitat quality of these waters by causing increases in suspended sediments and turbidity, releasing contaminants (e.g., fuels, lubricants), or removing (fill in) waters immediately adjacent to and downstream of project mining activities Mining and enhancement activities could disturb soils adjacent to waterways, particularly if heavy equipment enters the wetted stream to install and

[5] Reference to "waters" includes wetlands.

remove temporary bridges or perform enhancement activities. Any resulting erosion from such mining or enhancement activities could temporarily increase turbidity and sedimentation downstream of the mining sites if soils were transported in river flows or stormwater runoff. This impact would be potentially significant.

Syar has identified various mining methods and operating standards that would avoid or reduce the impacts on wetlands and waters of the United States and the state, including avoidance of the active waters during mining procedures and implementation of BMPs. Additionally, a dewatering plan would be implemented during enhancement activities, if work in the active stream channel is necessary for construction of alcoves. However, additional mitigation measures would be necessary.

Mitigation Measures

3.3-9a **Survey for Wetlands and Jurisdictional Waters.** Jurisdictional waters outside the OHWM may shift in location or may appear or disappear from year to year. Before any mining activities commence for that mining year, a preliminary survey of wetlands and waters of the United States and the state shall be conducted for affected areas outside the OHWM to determine the need for a jurisdictional delineation. If no wetland areas are detected, no further action is required. If the preliminary survey of the proposed mining and/or enhancement area identifies potential wetlands and waters, the wetland areas shall be avoided, or a qualified biologist shall perform a wetland delineation per the USACE regulations and submit the delineation to USACE for verification. Once verified, copies of the delineation shall be provided to DFG and the North Coast RWQCB.

3.3-9b **Avoid Jurisdictional Waters and Provide Compensatory Mitigation for Loss of Waters.** Consistent with Section 404 of the CWA, which requires that projects avoid or minimize adverse effects on jurisdictional waters, these areas shall be avoided to the greatest extent feasible. Where wetlands and other waters cannot feasibly be avoided and lead to permanent impacts, compensatory mitigation, pursuant to Measure 3.3-6c, shall ensure that the project would cause no net loss of wetland functions and services. Syar shall provide compensatory mitigation for permanent loss of waters of the United States and state as required by regulatory permits issued by USACE, the North Coast RWQCB, and DFG.

3.3-9c **Obtain and Comply with Required Permits, Certifications, and Agreements.** Water quality certification and/or a waste discharge requirement from the North Coast RWQCB would be required pursuant to Section 401 of the CWA and/or the Porter-Cologne Water Quality Control Act. A permit through USACE for discharge of dredged and fill material into waters would be required pursuant to Section 404 of the CWA. In addition, DFG has jurisdiction pursuant to Section 1602 of the Fish and Game Code; thus, a streambed alteration agreement from the DFG would be required. Terms and conditions of the permits normally include measures to protect and maintain water quality, restore work sites, and mitigate for temporary and permanent wetland impacts. Through the AMS process, which calls for participation of the above resource agencies, Syar shall obtain all required permits before implementation of the project and shall comply with all permit conditions.

In addition to the above measures, implementation of Mitigation Measure 3.11-1 in Section 3.11, "Hazards and Hazardous Materials," shall be applied to this impact.

Impact Significance After Mitigation

In addition to the various mining methods and operating standards identified by Syar to avoid or reduce impacts, Mitigation Measures 3.3-9a through 3.3-9c and Mitigation Measure 3.11-1 would reduce the impacts on waters of the United States to a less-than-significant level.

Impact 3.3-10 Mining activities, including skimming and construction of access routes to gravel bars, and enhancement activities could result in loss of County–protected tree species, thus conflicting with local plans and policies.

Portions of the study area, including access routes to the bars, have mature riparian vegetation. To perform mining activities on, provide access to, and perform enhancement activities on these bars, Syar may need to remove trees protected by Sonoma County Tree Protection and Replacement Ordinance as described under "Local Regulatory Issues."

Protected tree species may line the outer streambeds and are at risk of removal when access crossings are installed, when mining is occurring on the bars, or during oxbow and alcove creation. This impact would be potentially significant.

Mitigation Measures

3.3-10a **Avoid Large Trees on Access Routes.** Syar shall select access routes to avoid, to the greatest extent feasible, mature trees greater than 9 inches dbh.

3.3-10b **Implement County Code Requirements for Removal of Protected Trees.** Syar shall comply with the Sonoma County Tree Protection and Replacement Ordinance, which identifies the mitigation requirement for removal of protected trees greater than 9 inches dbh as well as conditions for conserving protected trees. Relevant conditions of the Code are as follows:

i. Syar shall clearly show on all improvement plans whether protected trees are to be retained or removed , and place a note on the plans that "Construction is subject to requirements established by Sonoma County to protect certain trees."

ii. Syar shall clearly delineate every tree designated for protection with a substantial barrier (usually orange plastic netted construction fencing) at the protected perimeter, or limits established during the permit process. The delineation markers shall remain in place for the duration of all work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of brush, earth and other debris as to avoid injury to any protected tree.

iii. When site work must encroach upon the protected perimeter of a protected tree, special measures shall be incorporated to allow the roots to obtain oxygen, water and nutrients. Tree wells or other techniques may be used where advisable. No changes in existing ground level shall occur within the protected perimeter unless a drainage and aeration scheme approved by a certified arborist is utilized.

iv. Syar shall not store or dispose of oil, gasoline, chemicals, or other substances that may be harmful to trees, within the drip line of any tree, or any other location on the site from which such substances might enter the dripline.

v. If any damage to a protected tree should occur during or as a result of work on the site, the County shall be promptly notified of such damage. If a protected tree is damaged so that it cannot be preserved in a healthy state, the planning director shall require replacement in accordance with the arboreal value chart. If on-site replacement is not feasible, the applicant shall pay the in-lieu fee to the tree replacement fund.

vi. Compaction of soils or stockpiling or parking of vehicles and equipment within the dripline or protected perimeter shall be prohibited.

Impact Significance After Mitigation

Implementation of Mitigation Measures 3.3-10a and 3.3-10b would reduce the impact on protected trees to a less-than-significant level.

Impact 3.3-11 Soil disturbance from mining activities and removal of vegetation could increase the occurrence of invasive plant species such as giant reed and tamarisk, which would be in conflict with Goal RC-5.1 of the *Sonoma County General Plan*. This goal aims to protect the county's diverse natural habitats by protecting biotic resources from development activities.

Physical disturbance to natural areas increases the likelihood of colonization by invasive nonnative plant species. If not controlled, these species can reduce the habitat quality of the surrounding natural communities by displacing native vegetation. Targeted removal of invasive plants such as giant reed or tamarisk may itself lead to greater propagation of the invasive species if the procedures for removal are incorrectly applied. During the removal of invasive plants, propagates of these plants may be released and transported by wind or may float downstream into other areas. Large dispersal of propagates can cause infestations of these plants downstream, especially if the transported plant material is from the root or rhizomes. Nearly all bars surveyed have giant reed invasions and communities and thus potential impacts could occur at all gravel bars. This impact would be potentially significant.

Syar has identified the removal of giant reed as one of the steps in conducting mining activities. However, the specific technique of removal has not been determined and would vary depending on the location of removal (e.g., within mining sites or along access roads). Proper implementation of this step would reduce the spread of giant reed. However, the following measure would still be required to ensure that tamarisk and giant reed invasion would not spread and result in a potentially significant impact.

Mitigation Measures

3.3-11 Syar shall work with the Sotoyome Resource Conservation District to identify appropriate measures to remove and prevent the spread of tamarisk and giant reed from the proposed mining and access areas. Appropriate methods of removal for the giant reed are described in the Mitigated Negative Declaration for the giant reed removal program (SRCD 2004) and amendment No. 1 to that document (SRCD 2007) and summarized below.

i. Initial removal of large stands of giant reed shall involve the cutting of stalks to within 12 inches of the ground by hand, flail mower, or similar mechanized apparatus.

ii. To prevent regrowth from removed biomass, all cane material shall be removed off-site and placed on nonpermeable surfaces to prevent rerooting, or burned or mulched into pieces of less than 2 inches in length.

iii. In smaller or confined areas, multiyear tarping may follow the initial removal of cane material as well as application of the herbicides glyphosate or Imazapyr in areas not adjacent to waterways.

iv. In larger stands and in the active floodplain, manual or mechanical root removal shall follow the initial removal of cane material. Roots and rhizomes shall be disposed of off-site.

v. Removal of tamarisk would generally be similar to that identified for giant reed. The Nature Conservancy (1998) developed guidance for the removal of tamarisk. When using the cut and herbicide method, the following chemicals shall be used: triclopyr herbicides Garlon 4® or Pathfinder II®. When herbicides cannot be used, the entire plant, with the rootball intact, shall be removed and disposed of off-site. Regular follow-up visits shall occur in the following seasons to assure the positive removal of the invasive plants, with retreatment occurring if necessary.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.3-11 would reduce the impact to a less-than-significant level.

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3.4 FISHERIES RESOURCES

This section describes the existing environmental and regulatory setting as it relates to fisheries resources in the Alexander Valley reach of the Russian River. It also discloses, analyzes, and mitigates the project's potential environmental impacts on fisheries resources.

Water quality, hydrology, and geomorphology are addressed in Section 3.2, "Geomorphology, Hydrology and Water Quality." Biological resources are addressed in Section 3.3, "Vegetation and Wildlife."

The Russian River has been the subject of many biological studies, and this evaluation builds on the existing scientific knowledge of fisheries and aquatic resources in the study area. Information described below is based on this collection of existing data and studies, including the following documents:

- Upper Russian River Steelhead Distribution Study (SCWA 2003);
- Biological Opinion for Issuance of a 404 Permit for Instream Mining in the Russian River by DeWitt Sand and Gravel (NMFS 2003);
- annual versions of the Stream Inventory Report for the Russian River, Lower Alexander Valley, California (Syar 2003, 2004, 2005a);
- Russian River Biological Assessment (ENTRIX 2004);
- Sediment Removal from Freshwater Salmonid Habitat: Guidelines to NOAA Fisheries Staff for the Evaluation of Sediment Removal Actions from California Streams (NOAA 2004);
- Biological Assessment for Listed Salmonids that may be Affected by Syar Industries Inc.'s Sand and Gravel Extraction in the Alexander Valley Reach of the Russian River, Sonoma County, CA (Syar 2006); and
- Russian River—Alexander Valley River Enhancement Plan for Syar Industries Reach (Gill Creek Confluence to Jimtown Bridge) (Syar 2008).

A. Setting

REGIONAL SETTING

Aquatic habitats and fisheries resources in the region are found in the Russian River and tributaries. These habitats and the associated aquatic community are described below.

Russian River

The Russian River drains approximately 1,485 square miles in Mendocino and Sonoma Counties and is approximately 110 miles long. Numerous tributaries in the watershed drain the surrounding mountains and flow into the flat, alluvial valleys of the upper and middle river. The Russian River provides wildlife and fish habitat, many recreational use areas, and a drinking water supply. Sonoma County Water Agency (SCWA) and several cities and unincorporated communities divert drinking water from the river. Residents and vacationers swim, canoe, and fish along the river in many areas.

The Russian River is affected by numerous natural and human-caused influences. Runoff patterns closely follow winter rains because the watershed lacks a snowpack to sustain a baseflow. River flow is also controlled by impoundments at Lake Mendocino and Lake Sonoma. Releases from these reservoirs strongly influence river hydrology, temperature, and the composition of the riverine aquatic community. Treated wastewater discharges, gravel mining, summer dams, water diversions, septic system discharges, and urban and agricultural runoff also influence the river.

Historically, steelhead trout (*Oncorhynchus mykiss*) and coho salmon (*O. kisutch*) spawned and juveniles reared in much of the mainstem Russian River. Currently, many species of introduced and native warmwater fish reside in the river year round, whereas coldwater fish (e.g., steelhead and coho salmon) occur primarily as migrants between the ocean and spawning areas in tributaries. In recent years, Chinook salmon (*O. tshawytscha*) have established a consistent run (at least 1,500 adults in 2000 and 2001, 5,466 adults in 2002) (ENTRIX 2004) and spawn in areas in the mainstem above Asti. Steelhead have been observed spawning and rearing in the mainstem as far downstream as Healdsburg (SCWA 2003, ENTRIX 2004). Coho salmon are generally thought to inhabit tributary streams on the Russian River downstream of the study area. Few individuals are thought to use the upper portions of the Russian River (including the Alexander Valley Reach) or its tributaries (Syar 2006, SRC 2006). Steelhead and Chinook salmon in the Russian River watershed are federally listed as threatened. Coho salmon in the Russian River watershed are federally and state listed as endangered.

LOCAL SETTING

Aquatic habitats and fisheries resources in the study area are found in the Alexander Valley reach of the Russian River. Aquatic habitats and the fish community are described below.

Russian River—Alexander Valley Reach

Aquatic Habitats

The Alexander Valley reach extends from the confluence of Big Sulphur Creek near Cloverdale (approximately 8.5 miles upstream of the study area) to the Alexander Valley Road (Jimtown) Bridge (approximately 1.5 miles downstream of the study area). The study area includes approximately 6.5 miles of river (upstream bar to downstream bar) and is at the southern extent of the Alexander Valley. Land use along the reach consists of agricultural land (vineyard) outside of the riparian zone and occasional aggregate mining along the gravel bars. Elevation throughout the Alexander Valley ranges from 190 feet to 295 feet representing an approximate reachwide average gradient of 1.15%.

The Alexander Valley reach consists of a slow-moving meandering river in a broad channel with large exposed gravel bars and dense riparian vegetation along the outer banks. Results of a survey conducted in 2003 showed that flatwater (e.g., glides and runs) is the dominant flow habitat and consists of approximately 62% of the reach (Syar 2004, 2006). Pool habitat with depths ranging from 4.3 to 11.2 feet consisted of approximately 26% of the reach. Riffle habitats tended to occur at meander crossovers and made up approximately 12% of the reach length (Syar 2004).

Sediment grain sizes vary depending on the type of flow habitat. Pools tend to contain small grain sizes (e.g., sand and small gravel); flatwater tends to contain gravel and small cobble; and riffles tend to contain a mix of larger gravel to large cobble. Gravels and cobbles in riffles have been observed to have high potential for salmonid spawning and egg incubation success (based on low embeddedness[1] values) (Syar 2004, 2006).

Summer water temperatures in the study area in 2003 were generally in the 20 degrees Celsius (ºC) to 25ºC range. The warmest period occurred in mid-July when temperatures rose to above 26°C (Syar 2004, 2006). These high temperatures result in substantially limited habitat values during summer months for cold-water species, including anadromous salmonids.

Shaded riverine aquatic (SRA) vegetation and instream tree and shrub debris provide important fish habitat. SRA habitat is defined as the nearshore aquatic habitat occurring at the interface between a river and adjacent woody riparian habitat. The principal attributes of this cover type are (1) an adjacent bank composed of natural, eroding substrates supporting riparian vegetation that either overhang or protrude into the water; and (2) water that contains variable amounts of woody debris, such as leaves, logs, branches, and roots and has variable depths, velocities, and currents. Riparian habitat provides structure (through SRA habitat) and food for fish species. Shade decreases water temperatures, while low overhanging branches can provide sources of food by attracting terrestrial insects. As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat consisting of large woody debris (LWD) that furnishes refugia from predators, creates higher water velocities, and provides habitat for aquatic invertebrates. For these reasons, many fish species are attracted to SRA habitat.

<u>Seasonal Habitat Use</u>

The use by fish species of different habitats within the study area is influenced by variations in habitat conditions, each species' habitat requirements, life history timing, and daily and seasonal movements and behavior. The study area contains nearly the full range of habitats preferred by anadromous salmonids including adult migration, holding, and spawning habitat; seasonal juvenile rearing habitat (temperature limited); edgewaters with SRA habitat; and high-flow floodplain and backwater refugia. The only exception is mid-summer/early fall rearing habitat, which is nearly nonexistent because of high water temperatures.

In general, the Alexander Valley reach of the Russian River provides (Syar 2006, SRC 2006):

- a fall/winter migration route for adult Chinook salmon and steelhead;
- suitable spawning habitat for adult anadromous salmonids, especially Chinook salmon;
- migration route for juvenile Chinook salmon and steelhead;
- spring rearing habitat for juvenile Chinook salmon and steelhead;
- very limited summer rearing habitat for juvenile steelhead; and
- little to no habitat for coho salmon (this species generally occurs downstream).

Fish Community

The fish composition of the Alexander Valley reach contains several native and nonnative fish species common in the Russian River (SCWA 2003, ENTRIX 2004). Summer temperatures in

[1] Embeddedness is the degree to which rocks (gravel, cobble, and boulders) are covered or sunken into fine sediment in the river bottom. Generally, as rocks become embedded, the surface area available to macroinvertebrates and fish (shelter, spawning, and egg incubation) is decreased.

the Alexander Valley reach of the Russian River often exceed optimal ranges for cold-water species (steelhead trout, Chinook salmon, and coho salmon) and sometimes reach lethal levels (Winzler and Kelly 1978). However, the cooler water released from Lake Sonoma into Dry Creek produces an average 4ºC decrease in the temperature of the Russian River below the Dry Creek confluence (ENTRIX 2004), approximately 18 miles downriver from the lowermost extent of the study area. This reduction in temperature in the mainstem presumably increases the probability of successful steelhead and salmon spawning and rearing downstream of the study area in the vicinity of the confluence (and for some further distance downstream).

Because of the elevated water temperatures in the summer, the Alexander Valley reach of the Russian River provides ideal habitat for many native and nonnative warmwater fish species and poor habitat for coldwater fishes for at least five months of each year (Roth et al. 1995, ENTRIX 2004). Warmwater fish species that occupy habitats in the river throughout the year include native species, such as Sacramento sucker (*Catostomus occidentalis*), hardhead (*Mylopharodon conocephalus*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento blackfish (*Orthodon microlepidotus*), Russian River tule perch (*Hysterocarpus traski pomo*), and Navarro roach (*Lavinia symmetricus navarroensis*). Introduced nonnative, warmwater species include carp (*Cyprinus carpio*), smallmouth bass (*Micropterus dolomeiu*), largemouth bass (*M. salmoides*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), and several species of catfish (*Ictalurus* spp. and *Ameiurus* spp.).

Special-Status Fish Species

Special-status fish species are legally protected or otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Special-status fish species addressed in this section include:

- species listed as threatened or endangered under the California Endangered Species Act (CESA) or federal Endangered Species Act (ESA);
- species identified by the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), or California Department of Fish and Game (DFG) as species of special concern; and
- species fully protected in California under the California Fish and Game Code.

A total of seven special-status fish species occur or have the potential to occur in the Alexander Valley reach of the Russian River and are described below (see Table 3.4-1). Of these species, Central California Coast coho salmon evolutionarily significant unit (ESU), California Coastal Chinook salmon ESU, and Central California Coast steelhead distinct population segment (DPS) are federally listed as threatened or endangered species. The four remaining species—Navarro roach, hardhead, river lamprey (*Lampetra ayresi*), and Russian River tule perch (*Hysterocarpus traskii pomo*)—are considered species of special concern by DFG and/or federal species of concern by USFWS or NMFS.

Brief descriptions for federally and/or state-listed fish species are provided below. Table 3.4-2 presents the life history, timing, and distributions of life stages for these species in the Alexander Valley reach of the Russian River.

Central California Coast Coho Salmon ESU

The Central California Coast coho salmon ESU was listed as a threatened species on October 31, 1996 (61 *Federal Register* [FR] 56138) and downgraded to endangered on June 28, 2005 (70 FR 37160). The ESU includes all naturally spawned populations of coho salmon from Punta Gorda in northern California south to and including the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento–San Joaquin River system. Critical habitat for coho was designated on May 5, 1999 (64 FR 24049). Critical habitat is designated to include the portions of the Russian River within the study area.

Table 3.4-1
Special-Status Fish Species Potentially Occurring in the Alexander Valley Reach of the Russian River

Species	Status [1]			Habitat	Likelihood of Occurrence
	USFWS	DFG	NMFS		
Coho Salmon, Central California Coast *Oncorhynchus kisutch*	–	CE	FE	High-quality, cool, perennial streams with clean, well-aerated gravel beds for spawning. Deep pools or glides with submerged root wads, downed woody debris, or other cover for juvenile rearing.	Low; Coho are not known to inhabit the Russian River within or upstream of the study area.
Chinook Salmon, California Coastal *Oncorhynchus tshawytscha*	–	–	FT	High-quality, cool, perennial rivers and larger coastal streams with clean, well-aerated gravel beds for spawning, deeper and larger gravel beds than needed for coho salmon or steelhead.	High; Adult migration, spawning, rearing (limited due to summer temperatures), and emigration life stages occur at or above the study area.
Steelhead, Central California Coast *Oncorhynchus mykiss*	–	–	FT	High-quality, cool, perennial streams with clean, well-aerated gravel beds for spawning, often in steep, rocky reaches of upper tributaries, as well as in broad riffles in larger rivers.	High; Adult migration, spawning, rearing (limited due to summer temperatures), and emigration life stages occur at or above the study area.
Russian River tule perch *Hysterocarpus traskii pomo*	–	CSC	–	Low-elevation freshwater streams. Emergent plants or overhanging banks or tree root wads for feeding, shelter, spawning, and rearing–livebearers.	High; waters in the study area provide foraging, holding, and spawning habitat.

**Table 3.4-1
Special-Status Fish Species Potentially Occurring in the Alexander Valley Reach of the Russian River**

Species	Status [1]			Habitat	Likelihood of Occurrence
	USFWS	DFG	NMFS		
Navarro roach *Lavinia symmetricus navarroensis*	–	CSC	–	Wide variety of river and stream habitat in Russian River watershed; broad tolerance of water quality conditions. Well-aerated gravel or emergent vegetation in flowing water for spawning.	High; waters in the study area provide foraging, holding, and spawning habitat.
Hardhead *Mylopharodon conocephalus*	–	CSC	–	Clear, high-quality streams with large, deep, rock- or sand-bottom pools. Clean gravel riffles for spawning.	High; waters in the study area provide foraging, holding, and spawning habitat.
River lamprey *Lampetra ayresi*	–	CSC	–	Cool, high-quality perennial streams for spawning and larval rearing. Clean, well-aerated gravel beds for spawning. Soft-bottom pools with abundant silt and detritus for larval rearing.	Uncertain; waters in the study area provide foraging, holding, and spawning habitat for river lamprey; however, use by this species is not well documented.

Notes:
DFG = California Department of Fish and Game; NMFS = National Marine Fisheries Service; USFWS = U.S. Fish and Wildlife Service

[1] Legal Status Definitions
USFWS and NMFS:
FT = Federal Threatened
FE = Federal Endangered

DFG:
CE = State Endangered
CSC = Species of Special Concern

Sources: USFWS 2009, Bunnel 1999; data compiled by AECOM in 2009

The coho salmon has a relatively fixed 3-year life cycle. The best available information suggests that life-history stages occur during times shown in Table 3.4-2 (Chase et al. 2000, 2001, 2002; Moyle 2002; Moyle et al. 1995; Steiner Environmental Consulting 1996). Most coho salmon enter the Russian River in November and December and spawn in December and January. Spawning and rearing occur primarily in tributaries to the lower Russian River. The most upstream tributaries with coho salmon populations included Forsythe, Mariposa, Rocky, Fisher, and Corral Creeks, but coho salmon have not been found in these streams in recent years (ENTRIX 2004). The Alexander Valley reach of the river (including the study area) would likely only serve as a passage corridor between the ocean and any potential upstream tributary habitat.

After hatching, young coho salmon spend approximately 1 year in freshwater before they become smolts (undergo a physiological change for adaptation to seawater) and migrate to the ocean. Freshwater habitat requirements for coho salmon rearing include adequate cover, food supply, and suitable water temperatures. Primary habitat for coho salmon includes pools with extensive cover. Outmigration takes place in late winter and spring. Coho salmon live in the ocean for a year and a half, return as 3-year-olds to spawn, and then die. The factors most limiting to juvenile coho salmon production are not completely understood, but may include high water temperatures, poor summer and winter habitat quality, and predation (ENTRIX 2004).

Table 3.4-2
Life History, Timing, and Distributions of Fish Species Life Stages in the Alexander Valley Reach of the Russian River

LIFE STAGE/LOCATION	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL[1]	AUG[1]	SEP[1]
Chinook Salmon												
Upstream Migration	■	■	■	■								
Spawning		■	■	■								
Incubation		■	■	■	■	■						
Emergence			■	■	■	■						
Juvenile Rearing					■	■	■	■	■			
Smolt Emigration						■	■	■	■			
Coho Salmon												
Upstream Migration		■	■	■								
Spawning		■	■	■								
Incubation			■	■	■							
Emergence					■	■						
Juvenile Rearing	■	■	■	■	■	■	■	■	■			
Smolt Emigration					■	■	■	■	■			
Steelhead Trout												
Upstream Migration		■	■	■	■	■	■					
Spawning				■	■	■	■					
Incubation				■	■	■	■	■				
Emergence						■	■	■				
Juvenile Rearing	■	■	■	■	■	■	■	■	■			
Smolt Emigration				■	■	■	■	■	■			

■ period of occurrence.
[1] Juvenile rearing is temperature limited during summer months.
Sources: ENTRIX 2004; SCWA 2003; Chase et al. 2000, 2001, 2002

California Coastal Chinook Salmon ESU

California Coastal Chinook salmon ESU was listed as a threatened species on September 16, 1999 (64 FR 50394). The ESU includes all naturally spawned populations of Chinook salmon from rivers and streams south of the Klamath River to the Russian River, California. Critical habitat for Chinook salmon was designated on September 2, 2005 (70 FR 52487). Critical habitat is designated to include the portions of the Russian River within the study area.

Adult Chinook salmon begin returning to the Russian River as early as late August, but most upstream migration occurs in October and November (Chase et al. 2001, 2002). Chinook salmon may continue to enter the river through December and spawn into January (Table 3.4-2). Adult Chinook salmon migrate upstream to their spawning habitat, located primarily in the mainstem Russian River above Asti and in selected tributaries such as Dry Creek.

Unlike coho salmon and steelhead, the young Chinook salmon begin their outmigration soon after emerging from the gravel. Freshwater residence in coastal California stocks, including outmigration, usually ranges from 2 to 4 months. Juvenile Chinook salmon in the Russian River emigrate as fingerlings from late February through June.

Ocean residence can be from 1 to 7 years, but most Chinook salmon return to the Russian River as 2- to 4-year-old adults. Like coho salmon, Chinook salmon die soon after spawning.

Central California Coast Steelhead DPS

The Central California Coast steelhead DPS was listed as a threatened species on August 18, 1997 (62 FR 43937). The DPS includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento–San Joaquin River Basin. Critical habitat for steelhead was designated on September 2, 2005 (70 FR 52487). Critical habitat is designated to include the portions of the Russian River within the study area.

Unlike coho salmon, steelhead do not have a fixed 3-year life cycle. Steelhead spend 1–2 years in the ocean before returning to spawn for the first time, and may return to the ocean and spawn again in a later year. Adult steelhead generally begin returning to the Russian River with the first heavy rains of the season in November or December, and continue to migrate upstream into March or April. The peak migration period tends to be January through March (see Table 3.4-2). Flow conditions are suitable for upstream migration in most of the Russian River and larger tributaries during most of the spawning period in most years. Sandbars blocking the river mouth in some years may delay entry into the river. However, when the sandbar is closed, the flow may be too low and water temperature too high to provide suitable conditions for migrating adults farther up the river (ENTRIX 2004).

Most steelhead spawning takes place from January through April, depending on the time of freshwater entry (Table 3.4-2). Steelhead spawn and rear in tributaries from Jenner Creek near the mouth to upper basin streams. After hatching, steelhead usually spend 2 years in freshwater, but can spend 1–4 years. Fry and juvenile steelhead are extremely adaptable in their habitat selection. Requirements for steelhead rearing include adequate cover, food supply, and suitable water temperatures. The mainstem above Cloverdale and upper reaches of the tributaries provide the most suitable habitat; these areas generally have excellent cover, adequate food supply, and suitable water temperatures for fry and juvenile rearing. The lower reaches of some tributaries provide less cover; these streams are often wide and shallow, have little riparian vegetation, and water temperatures are often too warm to support steelhead (ENTRIX 2004). Distribution of steelhead correlates with water temperatures (SCWA 2003). The highest temperatures occurred in the Alexander Valley and Healdsburg reaches (25ºC and 24ºC, respectively).

Emigration usually occurs between February and June, depending on flow and water temperatures. Sufficient flow is required to cue smolt downstream migration (ENTRIX 2004). Excessively high water temperatures in late spring may inhibit smoltification in late migrants.

B. Regulatory Framework

FEDERAL REGULATORY ISSUES

Federal Endangered Species Act

Pursuant to the ESA, USFWS and NMFS have authority over projects that may result in take of a species federally listed as threatened or endangered. A description of the ESA is provided in the "Regulatory Framework" discussion in Section 3.3, "Vegetation and Wildlife."

Sustainable Fisheries Act

In response to growing concern about the status of U.S. fisheries, Congress passed the Sustainable Fisheries Act of 1996 (Public Law [PL] 104-297) to amend the Magnuson-Stevens Fishery Conservation and Management Act (PL 94-265), the primary law governing marine fisheries management in the federal waters of the United States. Under the Sustainable Fisheries Act, consultation is required by NMFS on any activity that might adversely affect essential fish habitat (EFH). EFH includes those habitats that fish rely on throughout their life cycles. It encompasses habitats necessary to allow sufficient production of commercially valuable aquatic species to support a long-term sustainable fishery and contribute to a healthy ecosystem. The Russian River has been designated as EFH for Pacific salmon.

Section 404 of the Clean Water Act

Section 404 of the federal Clean Water Act (CWA) establishes a requirement for a project applicant to obtain a permit before engaging in any activity that involves any discharge of dredged or fill material into "waters of the United States," including wetlands. A description of Section 404 is provided in the "Regulatory Framework" discussion in Section 3.3, "Vegetation and Wildlife."

Section 401 of the Clean Water Act

CWA Section 401(a)(1) specifies that any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters shall provide the federal licensing or permitting agency with a certification that any such discharge will not violate state water quality standards. The regional water quality control boards administer the Section 401 program with the intent of prescribing measures for projects that are necessary to avoid, minimize, and mitigate adverse impacts on water quality and ecosystems. The project would require a Section 401 permit from the North Coast Regional Water Quality Control Board.

STATE REGULATORY ISSUES

California Endangered Species Act

Pursuant to the CESA and Section 2081 of the California Fish and Game Code, a permit from DFG is required for projects that could result in the take of a state-listed threatened or endangered species. A description of the CESA is provided in the "Regulatory Framework" discussion of Section 3.3, "Vegetation and Wildlife."

State CEQA Guidelines, Section 15380

Endangered, rare, or threatened species are defined in Section 15380 of the State CEQA Guidelines. These definitions are provided in the "Regulatory Framework" discussion in Section 3.3, "Vegetation and Wildlife."

California Fish and Game Code, Section 1602—Streambed Alteration Agreement

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by DFG under Section 1602 of the California Fish and Game Code. A description of Section 1602 is provided in the "Regulatory Framework" discussion of Section 3.3, "Vegetation and Wildlife."

LOCAL REGULATORY ISSUES

Goals in the Resource Conservation Element of the *Sonoma County General Plan* that apply to the project include RC-6 (special-status species) and RC-8 (freshwater fisheries resources).

Goal RC-6: Identify and protect rare and endangered species and their environment.

Objective RC-6.1: Identify the locations of rare and endangered plants and animals.

Objective RC-6.2: Require that any development on lands containing rare and endangered species be done in a manner which protects the resource or mitigates adverse impacts.

Goal RC-8: Encourage effective management of freshwater fishery resources and balance competing agricultural, development, and mining needs with protection of the stream environment.

Objective RC-8.1: Identify sources of sediment and erosion and minimize their impact on local water courses.

Objective RC-8.2: Manage riparian corridors along streams to provide protection for fish habitat.

Objective RC-8.3: Encourage the preparation of a fishery management plan.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFG, USFWS, or NMFS;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- substantially reduce the habitat of a fish or wildlife species;
- cause a fish or wildlife population to drop below self-sustaining levels;
- threaten to eliminate a plant or animal community; or
- substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

PROGRAM IMPACTS

Findings in the ARM Plan PEIR and Project

The ARM Plan PEIR evaluated potential fisheries impacts in Section 8.5, "Fisheries." The PEIR determined that instream operations could result in bank erosion, increased water temperatures, increased sedimentation, loss of cover, loss of spawning habitat, a reduction of food supply, an increased potential for stranding of juvenile fish, and interference with migratory patterns. The PEIR mitigated potential impacts to less-than-significant by establishing mining standards limiting the location, depth and timing of mining activities and requiring inspections and monitoring. When the ARM Plan was adopted in 1994, there were no threatened or endangered fish species in the Russian River watershed and few special status aquatic species (i.e. freshwater shrimp) as discussed in Section 3.3 "Vegetation and Wildlife". The ARM Plan focused on minimizing degradation of the river channel bed and lateral bank erosion while maintaining flood capacities. There are no goals or objectives in the ARM Plan relating to the protection of aquatic habitat.

The project requires amendments to many ARM Plan and mining ordinance standards to allow a different method of mining (see Chapter 1, "Introduction and Project Description"). ARM Plan standards currently allow bar skimming only in the lower half of the bar (defined as the apex or widest point on a bar) at a 2% cross slope with a minimum 15-foot side bar buffer. The proposed project, however, is based on the federal Sediment Removal Guidelines (NOAA, 2004), which call for larger side bar buffers to retain the geomorphic processes that form aquatic habitat. Instead of skimming a bar at a cross slope, the proposed mining method would excavate a trough in a horseshoe shape down to 1 foot above the low flow water level and extending down the bar at the gradient of the channel to connect with the channel and allow for drainage of the mining area. Although not specifically called for in the federal guidelines, the proposed project seeks to mine the lower two-thirds of the bar and strengthen the bar head with transplanted vegetation. The project also identifies the Effective State Discharge Height (ESDH) method, which, according to the mining plan, would be based on a HEC-RAS model and define the mining area based on the level of the effective discharge (see Section 3.2 "Geomorphology, Hydrology and Water Quality"). The intent of the new horseshoe and ESDH mining methods is to better protect aquatic habitat and especially the processes that form pool and riffle habitat for threatened and endangered fish.

The project also proposes a separate River Enhancement Plan (REP) that includes an assessment of the mining reach, identification of opportunities for enhancing riparian habitat, and a range of options for enhancement including:

- excavation of alcoves to expand access to tributaries and oxbows; and
- floodplain benches or terraces to create low-lying areas for riparian and wetland restoration that would provide important off-channel refugia for fish during high flow events and an important source of food supply for young fry.

Other enhancement features include installation of Large Woody Debris (LWD) to increase channel complexity and bioengineered bank stabilization methods to prevent excessive erosion. The REP includes six specific enhancement projects, which are further discussed in the Project Impacts section below. The REP also requires an amendment to the ARM Plan to allow excavation below water levels for the enhancement features and temporary channel diversion and dewatering for the bank stabilization and LWD features. The project also includes a request to allow a waiver of the Russian River Gravel Mitigation Fee based on the implementation of the REP.

The proposal also requests an amendment to the ARM Plan to allow a longer term permit of 15-years, rather than the 10-year permit currently allowed, and includes an Adaptive Management Strategy (AMS) that would allow adjustments to the monitoring requirements, mining location and methods, enhancement features or other remediation as determined by PRMD in consultation with the Scientific Review Consultants (SRC) and resource agencies.

The requested changes to the ARM Plan and mining ordinance are intended to improve the mining standards to preserve the geomorphic processes that protect aquatic habitat, as further evaluated in Section 3.2 “Geomorphology, Hydrology and Water Quality”. Amendments to the ARM Plan and mining ordinance would be effective immediately and would apply not only to this project, but also to certain future permits or permit renewals, until modified or amended by the Board of Supervisors. The following discussion focuses on the program-wide impacts of the proposed ARM Plan and SMARO amendments on fisheries resources. The following identifies mitigation measures to be incorporated into the ARM Plan and mining ordinance that would apply to the proposed project, as well as other future mining permit or permit renewals.

Impacts of Revised Baseline Elevations and Slope

Impact 3.4-1 Lowered minimum baseline elevations to 1 foot above the low flow channel would maintain the channel vertical stability such that the geomorphic processes that maintain pool and riffle habitat would not be disrupted.

As discussed in the impact discussion Section 3.2-1 of “Geomorphology, Hydrology and Water Quality”, impacts of revising the minimum baseline elevations to 1 foot above the low flow channel would be less than significant. The proposed change in ARM Plan and SMARO standards would eliminate the required 2% slope, which could allow for deeper mining on parts of the bar, but would also establish a new baseline at 1 foot above the low flow channel elevation or previously established baseline levels (i.e. at the DeWitt Bars). The proposed change would not disrupt geomorphic processes or cause any significant change in channel morphology because of the added provision that the skimmed floor elevation shall be maintained at 1 foot above the baseline elevation established during the first year of mining following adoption of the amendments.

Mitigation Measures

None.

Impact 3.4-2 Deeper excavations in the mining area and construction of the alcoves, oxbows, floodplain benches or terraces could create depressions that entrap and result in a direct loss of fish, including endangered and threatened salmonids.

Instream mining or construction of enhancement features could cause a direct loss of fish, including special-status species, from fish stranding on enhanced bars or banks. The mining ordinance already requires mitigation measures including the establishment of finished grade slopes to drain to the low flow channel (Section 26A-11-010 (b)). However, even though a slope gradient is required for final grades, winter storms may deposit sediment that could trap fish as the flow recedes. This is a potentially significant impact.

Mitigation Measures

3.4-2 Each spring after mining or construction of enhancement features, the operator shall hire a qualified biologist to inspect each mined bar and excavated enhancement area after each high flow event equal to or greater than a 2-year storm. The biologist shall capture and release any stranded fish under permit with CDFG and/or NMFS and make recommendations for correcting the slope to drain properly. The inspections shall be conducted for a minimum of 3 years following mining or construction. The operator shall be required to complete any corrective actions necessary to prevent fish stranding. These measures shall be incorporated into the mining ordinance (SMARO) Section 26A-11-020 (b).

Impact Significance After Mitigation

Mitigation Measure 3.4-2 will reduce the impact of fish stranding to less-than-significant.

Impact of Revised Head of Bar Buffers

Impact 3.4-3 Reduced buffers at the head of bar could cause erosion or scour of the upstream and downstream riffles as well as increased sedimentation that could degrade spawning gravels.

The proposed ARM Plan amendment to allow mining of the lower two-thirds of the bar retaining the upper one-third of the bar as a buffer may not, in all cases, provide sufficient buffer area or height to prevent water from cutting through the bar head, potentially creating a high flow chute channel and disrupting the processes that maintain the pools and riffles, resulting in scour of the upstream or downstream riffles. The current ARM Plan standard of allowing mining only downstream of the bar apex has proven sufficient to maintain the bar head. Where the mining was permitted in the upper one-half impacts to channel form have been observed. This impact is potentially significant.

The NOAA (2004) Sediment Removal Guidelines suggest that the geomorphic processes that maintain the bar form should be preserved below the height equivalent to the dominant discharge. The dominant discharge in the lower Alexander Valley Reach is estimated to be approximately 11,000 cfs (at the Cloverdale gauge) or about a 1.2-year flow, which corresponds to approximately 8 feet above the low flow water surface elevation at the upstream riffle crest (see discussion in section 3.2.1.1). Mitigation Measure 3.2-2 would maintain the current ARM

Plan standard of allowing mining only downstream of the widest point, and allow an exception to mine up to two-thirds of the bar only when the head of bar buffer is at least 8-feet above the low flow water surface at the upstream riffle crest.

Mitigation Measures

The mitigation measures in Section 3.2, "Geomorphology, Hydrology, and Water Quality", including Mitigation Measure 3.2-2 shall apply to erosion and scour of the upstream and downstream riffles as well as increased sedimentation.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.2-2 would reduce all secondary impacts to a less-than-significant level.

Impact of Revised Side Bar Buffers

Impact 3.4-4 The increase in the side bar buffer standards would maintain the geomorphic processes that form and maintain pool habitat for endangered and threatened salmonids.

The proposed 20% side bar buffers proposed typically would be 150-200 feet wide, which is substantially larger than the minimum 15-foot setback contained in the current ARM Plan. The 15-foot setback has not been sufficient to protect the outer perimeter of the bar from being eroded or breached, and it has allowed flows into the mined portion of the bar during even relatively moderate flow events.

NOAA's (2004) Sediment Removal Guidelines suggest a more appropriate methodology for establishing the height of side bar buffers so they retain the topographic attributes of the bar up to at least the elevation of the dominant discharge, which is estimated at approximately 8-feet above the low flow water surface elevation (estimated at 200 cfs). The 15-foot minimum width of the side bar buffers required by the current ARM Plan should be increased to minimize the potential for their erosion, but the buffer width should not be so great as to contribute to braiding. Although the proposed side bar buffers could have other negative impacts of splitting the channel flow as described in Section 3.2 "Geomorphology, Hydrology and Water Quality" (see impact discussion in section 3.2-3), the effect of the increased side bar buffers at the 15% or 20% of the active channel width would provide sufficient strength to maintain the pool habitat during the dominant discharge flow. This is a beneficial impact.

Mitigation Measures

None. The change in required side bar buffers would benefit fisheries resources by maintaining pool habitat for threatened and endangered salmonids. See Mitigation Measure 3.2-3 for recommended minimum and maximum side bar buffers and other criteria**.**

Impact of Adaptive Management Strategy

Impact 3.4-5 The proposed AMS proposes to rely on monitoring data that is not adequate to detect changes in aquatic habitats related to mining or enhancement activities. These changes could result in disruption of sediment transport processes resulting in loss or degradation of aquatic habitat for special status fish or other aquatic species.

Instream mining or construction of enhancement features could result in temporary increases in fine sediment, turbidity, and disruption of sediment transport processes resulting in the loss or degradation of spawning beds from sediment deposition in the riffle substrates, reduction of pool volumes or riffle areas, and changes to hyporheic flow patterns (mixing of groundwater with surface waters) that could increase water temperatures. Although the proposed standards are designed to protect aquatic habitats and the geomorphic processes that maintain them, it is possible that impacts on riffle and pool function could still occur through an incremental loss of habitat area and/or degradation of habitat quality. The proposed amendments include an AMS that provide a mechanism to monitor instream habitat, but the AMS currently lacks specific performance criteria or mechanisms described to address potential impacts should they occur. The following mitigation measures shall be incorporated into the ARM Plan for the lower Alexander Valley Reach.

Mitigation Measures

Riffle habitat area and quality, pool depth, pool habitat quantity, and pool and riffle substrate grain size distribution trends shall be monitored against the following performance criteria incorporated into the site specific objectives of the ARM Plan for the lower Alexander Valley Reach.

3.4-5a **Riffle and Pool Habitats.** To address the potential impacts on riffle and pool habitats, the operator shall provide pre- and post-mining surveys of riffle and pool habitat as defined. The operator shall include a comparative analysis of pre- and post-mining fisheries habitat in the monitoring reports. Baseline monitoring shall be conducted for the permitted mining reach in the first year prior to mining after a 5-year or greater flood, or once every 3 years if no such flood occurs.

Riffle Habitat

- *Monitoring:* Riffle habitat shall be monitored through redd[2] counts and substrate grain size distribution measurements. Redd counts shall follow protocols described in Flosi et al. (1998). Substrate grain size distribution measurements shall use the freeze-core method.
- *Performance Criteria:*
    - o The total redd counts shall not decrease more than 20% relative to the population abundance (migrating adults) in the baseline period.
    - o The average riffle substrate grain size distribution trend, over a 3-year or greater period shall not increase the amount of fines (<1.6 mm) by more than 5% of baseline over the permitted reach.

Pool Habitat Quantity

- *Monitoring:* Pool habitat quantity shall be measured in number and area of pools deeper than 3 feet and mapped on aerial photographs.
- *Performance Criteria:*
    - o Average number and area (deeper than 3 feet) of pools shall not decrease over the permitted reach.

[2] Redds are spawning nests made by fish, especially a salmon or trout.

- Pool habitat quantity shall not decrease by 15% or more at the localized mining area.

Pool Habitat Quality

- *Monitoring:* Pool habitat quality shall be monitored through measurements of residual pool depth (the difference between the downstream riffle crest elevation and the elevation at the deepest part of the pool.
- *Performance Criteria:*
  - Average residual pool depth for the permitted reach shall not decrease more than 5% of baseline or more than the average for the control area upstream of the mining reach.
  - Residual pool depths at each pool in the localized mining area shall not decrease more than 15% or the average for the control areas upstream of the mining site.

3.4-5b **Adaptive Management:** If any of the performance criteria for riffle or pool habitat are exceeded in any given year, it indicates that impacts to aquatic habitats may be occurring. The operator shall hire a qualified fisheries biologist to conduct an investigation and provide a report including proposed remediation measures to PRMD for review. The PRMD in consultation with the SRC and resource agencies will determine what steps should be taken to address habitat concerns, including but not limited to: suspension of mining, additional studies or monitoring requirements, modified mining methods, limitations on the location of future mining activities, additional enhancements or other remediation measures. The operator shall conduct any necessary studies and incorporate changes to the monitoring program, annual mining plan or Enhancement/Reclamation Plan, implement other remediation, and/or suspend mining to meet the performance criteria.

Impact Significance After Mitigation

Mitigation Measure 3.4-5 will reduce the impacts to pool and riffle habitats to less-than-significant.

Impact of Mitigation Fee Waiver With River Enhancement Plan

Impact 3.4-6 The proposed ARM Plan amendment to allow waiver of the established Russian River Gravel Mitigation Fund impact fee based on an Enhancement Plan could reduce mitigation requirements.

The ARM Plan PEIR recognized the potential for mining to impact riparian resources and required all instream operators to contribute to a new Russian River Gravel Mitigation Fund to mitigate these potential long-term effects. The fund addressed four specific programs for mitigation of long-term cumulative impacts, including: agricultural support; recreation enhancement; flood protection; and stream restoration. However, the ARM Plan also acknowledged that disputes regarding potential project impacts could be raised during County permit proceedings, and allow for the Board of Supervisors to make adjustments to the mitigation fee charges based on annual reports or other information demonstrating reduced impacts. Syar has proposed a more comprehensive River Enhancement Plan and therefore requests a waiver of the fees for past mining activities as well as the current project. The proposed ARM Plan changes would allow a fee waiver based on the approval of an Enhancement Plan incorporated into the Reclamation Plan.

To date the fund has not generated sufficient funds to implement any substantial stream restoration work, although the portion of the funds for fish barriers and recreation impacts have been used to construct the fish ladder installed in Healdsburg just below Memorial Beach, and acquire public access at Salmon Beach near Rio Nido. Furthermore, the cost of construction has increased substantially since the fee was adopted. The fee does not include the cost of planning, design, environmental review, and permitting (which can be as much as 20% of the total construction costs).

The proposed River Enhancement Plan (REP) or any future enhancement plan associated with future mining permits or permit renewals would be implemented as part of the mining permit approvals, and provide a more immediate mitigation than the ARM Plan program. However, the proposed amendment does not yet include any standards for the restoration work, or a monitoring program, performance criteria or financial assurance to ensure the success of the enhancement program. The future enhancement activities may therefore result in potentially significant impacts to fisheries resources.

Mitigation Measures Mitigation Measure 3.3-2 in Section 3.3, "Vegetation and Wildlife" establishes restoration standards, monitoring requirements, performance criteria and financial assurances that will substantially reduce the impact of enhancement plans to a less-than-significant level.

PROJECT IMPACTS

This section provides a full and independent analysis of all potential impacts on fisheries and aquatic resources that could occur as a result of implementation of the proposed mining permit and river enhancement plan.

Impact 3.4-7 The project could result in increases in sediment and turbidity and the loss or degradation of riffle and/or pool habitats from indirect, project-related effects on sediment transport and deposition processes.

Turbidity and Sedimentation

Mining and river enhancement activities would temporarily disturb soils and sediments on the surface of the floodplain and bars adjacent to the low-flow channel of the Russian River. Skimming activities often result in a higher proportion of sand and fine sediment on the mined surface compared to the pre-mining condition. Further, enhancement activities could result in disturbance of instream sediments in relatively small areas where these features interface with the low-flow channel (e.g., where alcoves connect with the low-flow channel of the river and where bank enhancements are planned). Any potential sediment input into and/or release within the river could result in temporary increases in turbidity and sedimentation downstream of the mining and enhancement sites throughout the study area.

Fish population levels and survival have been linked to levels of turbidity and silt deposition. Prolonged exposure to high levels of suspended sediment (as measured against ambient conditions) could create a loss of visual capability in fish in the study area aquatic habitats, potentially leading to a reduction in feeding and growth rates; a thickening of the gills, potentially causing the loss of respiratory function; clogging and abrasion of gills; and increases in stress levels, reducing the tolerance of fish to disease and toxicants (Waters 1995). Increased turbidity also could result in increased water temperatures and biological oxygen demand, which in turn could reduce dissolved oxygen levels and result in stress respiration.

High levels of suspended sediments could also cause the movement and redistribution of fish populations, and could diminish the character and quality of the physical habitat important to fish survival. Once suspended sediment is deposited, it could reduce water depths in pools, decreasing the water's physical carrying capacity for juvenile and adult fish (Waters 1995). Habitat disturbance and increased turbidity could also diminish fish forage species (e.g., macroinvertebrates) and degrade food web dependent microhabitats within and adjacent to extraction areas through interference with photosynthesis of aquatic flora and displacement of aquatic fauna. Salmonids and other fish are sight feeders, and turbid waters reduce the ability of these fish to locate and feed on prey. Some fish, particularly juveniles, likely would become disoriented and potentially leave areas where food resources are located, thus potentially reducing growth rates. Prey (e.g., macroinvertebrates, plankton) of resident and anadromous fish populations would decline as a result of disturbance, degradation of habitat (i.e., water quality conditions) such as increased turbidity, decrease in dissolved oxygen content, and increased level of pollutants (Coull and Chandler 1992). Avoidance of adverse habitat conditions by fish is the most common result of increases in turbidity. Fish would not occupy areas unsuitable for survival unless they have no other option and, when forced into such habitat, could eventually decline in population.

Potential sediment inputs into the river would generally occur after the mining and construction season has ended as a result of localized precipitation-generated runoff and/or from high-flow events that eventually overtop the mined bar, floodplain, and/or enhancement areas. To minimize localized precipitation-generated runoff, Syar proposes to conduct bar skimming, and enhancement activities in the dry season from June 1 to November 1, and generally outside the wetted stream and above the summer low-flow channel of the Russian River, thus limiting erosion potential and sediment discharge into the river. Syar would also implement best management practices (BMPs) to minimize erosion at access roads, staging areas, and areas where mining and/or construction would occur (see Chapter 1, "Introduction and Project Description").

The potential for sediment release within the river would generally occur during the construction of enhancement features at the interface of the bar/floodplain and low-flow channel of the river. Enhancement features located at the interface of the low-flow channel include alcoves (at the point of connection with the low flow channel) and streambank enhancements. These activities have been designed to include several measures to avoid and minimize potential impacts on aquatic habitats and fish. These measures include sequencing of construction activities to minimize disturbance to the wetted channel, implementing BMPs (including silt curtains) to reduce sedimentation and turbidity, and dewatering and fish translocation (where necessary) (see *Draft Russian River—Alexander Valley River Enhancement Plan for Syar Industries Reach (Gill Creek Confluence to Jimtown Bridge)* [Syar 2008] for additional description of BMPs proposed as part of the enhancement activities). Once construction is complete, the enhancement features would result in improved conditions for juvenile overwintering, increased opportunities for recruitment of LWD, increased production of food supply (e.g., benthic macroinvertebrates) and reduced sediment inputs into the river associated with existing, ongoing bank erosion. Implementation of the REP would thus result in long-term beneficial impacts to fisheries resources. Alcove construction would also provide improved connectivity and access to the tributaries resulting in a beneficial short-term impact.

After the mining and construction season, the first fall rains tend to occur without much runoff, as the dry, porous gravel bars and floodplain absorb much of the precipitation before becoming saturated. These early rains would cause a substantial portion of the exposed sand and fine sediment to infiltrate down into the post-mined surface, leaving a layer of relatively clean exposed gravel. This gravel would help stabilize the post-mined surface and reduce the potential for erosion and transport of fines from the bar and floodplain during subsequent precipitation and localized runoff events and/or high-flow events that may overtop the bars and floodplain.

In regard to higher flows (generally in winter and early spring) that overtop gravel bars, inundate the floodplain, and entrain fine and coarser sediments, the project includes mining and river enhancement methods that maintain gravel bars with intact head and edge of water buffers (e.g., horseshoe and effective discharge stage height (EDSH) skims, and alcove and oxbow construction) that create a condition where the bars, oxbows, and alcoves initially become inundated through a backwater effect. This backwater effect would be generated by the head and edge of bar buffers directing the river flow around the mined and/or enhanced surfaces to the downstream end of the bar and/or enhancement feature (e.g., alcove). Low-flow velocity backwater would originate at the downstream end of the bar and/or enhancement feature and slowly inundate the disturbed area and eventually the floodplain as the river rises. During this period, fine sediments may become entrained in river flows and create increased turbidity in the excavated area and downstream.

At the same time, the backwater areas (mined or enhanced bar and/or floodplain surfaces) also may become depositional sites for existing fines that originate from the watershed (i.e., existing condition) suspended in the river flows. As river flows increase, the upper head and edge of bar areas would begin to be overtopped, but the backwater pool of water on the bar surface would create a velocity sink, decreasing the river's sediment transport ability at that location as a result of decreased velocity and causing river sediment to settle out. At this stage, the main channel would continue to have high water velocity, which may carry a large amount of fine and coarse sediment.

Eventually there may be sufficient flow over the mined and/or enhanced surface (both bar and floodplain) to mobilize a considerable amount of fines for transport downstream; however, the origin of these fine sediments is both from the post-mined surface as well as those background sediments that were originally deposited (from the river) on the rising leg of the hydrograph.

Instream mining and enhancement activities could result in increased turbidity and downstream sedimentation; however, the project's mining methods, BMPs, and adaptive management strategy (AMS) would tend to minimize this potential.

Riffle Habitats

Riffle habitats in the study area tend to occur at meander crossovers and make up approximately 12% of the reach length (Syar 2004). Riffles provide many important habitat functions for salmon and steelhead, including providing spawning areas for adults and rearing areas for juveniles. Important attributes for these two habitat functions include appropriately sized, stable gravels and cobbles with clear interstitial spaces (i.e., free of fine sediments) for spawning and egg incubation, and habitat complexity with periodic coarse cobbles and boulders for juvenile rearing (providing localized velocity refugia [i.e., pockets] that serve as important feeding stations). Conversely, riffles have the potential to serve as barriers to fish migration and movement if they become too uniformly shallow over an extended area. In addition to providing habitat function for fish, riffles are turbulent water areas that are important for maintaining high concentrations of dissolved oxygen in the water column and provide important habitat for benthic macroinvertebrates.

Adult Spawning and Egg Incubation—If not conducted appropriately, mining of bars has the potential to adversely affect riffle habitats. When channel bars are removed or partially removed, the channel could be effectively widened, resulting in increased shear stress at lower flows and therefore resulting in increases in migrating gravel particles. Historical spawning gravel deposits may be scoured and swept downstream as the result of increased shear stresses at riffles. Elevated bed shear stresses could also preclude the deposition of new spawning gravel supplied from upstream sources, and upstream sources could be depleted by sediment removal through mining. Although redd scour occurs at some critical discharge in unaltered streams, the effect of stream alteration is to lower that critical discharge and increase the probability of premature redd scour in a given year (NOAA 2004).

An opposite effect, increased deposition on riffles, could occur where sediment removal extends to bar areas that are adjacent to riffles. Instream mining has the potential to degrade spawning habitat by increasing the supply of fine sediments that could deposit and clog the interstitial pores of coarse substrates. An armor layer of coarse particles normally covers the surface of mature alternate bars. Because channel bars are coarser at their surface than at subsurface, bar skimming exposes smaller sediment particles that are readily transported downstream to clog coarse sediment interstices (NOAA 2004).

Observations and surveys indicate that the much of the Russian River watershed has a large proportion of fine sediments, even in areas where mining has not occurred (NMFS 2003, NHC 2003, Syar 2006, SRC 2006). Fine sediments may be mobilized and transported from the bar surface during the first substantial storms following mining. During these storms, large amounts of fine sediment are likely mobilized throughout the watershed, resulting in high turbidity even without mining (NMFS 2003, NHC 2003, Syar 2006). Because the bars and floodplain are depositional areas within the river, sediments would be deposited on a bar and/or floodplain at the same time other sediments wash from the bar and/or floodplain. Nonetheless, the proposed mining could temporarily disturb sediments on the surface of the bars, breaking up the coarser armor layer on the surface. This would expose gravels and fines below the armored surface layer, which then can enter the water column when flows over-top the bar. Thus, skimming activities often result in a higher proportion of sand and fine sediment on the mined surface compared to the pre-mining condition. In addition, the mining area creates a backwater effect allowing for deposition of sediments in the immediate vicinity which could result in temporary increases in sedimentation within and downstream of the mining site.

Habitat Complexity (Migration Barriers and Juvenile Rearing)—In natural streams, shallow riffles could be migration barriers to upstream migrating adult salmon and steelhead. Channel stability and its effect on the shape of the low-flow channel and flow depths govern the extent of the barrier during migration seasons. Mining activities that result in increases in channel width-to-depth ratios increase the probability that shallow flows at riffles could form migration barriers.

In addition to reducing stream water depths over riffles (as a result of increasing channel width-to-depth ratio), instream mining activities have the potential to increase current velocities, create more uniform substrate conditions, and reduce flow complexity (e.g., small pockets and eddies within riffles), thereby forcing migrating and rearing salmonids to expend additional energy. Reduced flow complexity and increased velocities, particularly reduced edge-water eddies and low-velocity zones, result from reduced sinuosity, increased channel width-to-depth ratio at bars, and reduced topographic complexity of geomorphic features. This could affect adult salmonids during their upstream migrations across riffles, and juvenile salmonids and other native fish species would face challenges finding and using localized velocity refuges during high flows in simplified, hydraulically smoother channels. Adult salmonid migration could also be adversely affected when sediment removal activities diminish the size and frequency of main stem pools, habitat used for holding and resting (see also separate discussion on pool habitats below) (NOAA 2004).

By contrast, the proposed creation of alcoves and other enhancement features would improve habitat complexity conditions throughout the study area. Alcoves and oxbows provide increased passage conditions at tributaries and thermal and velocity refugia areas along the bar areas adjacent to the low flow channel.

Benthic Macroinvertebrate Production—Benthic macroinvertebrates are the principal food source for most juvenile salmonids (Spence et al. 1996). Immature mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera), referred to collectively as EPT taxa, are considered the most productive, preferred, and available foods for stream fishes (Waters 1995). The abundance of these three groups of aquatic macroinvertebrates is commonly used as a food availability index (Lenat 1988). These taxa groups have also been determined to be sensitive to environmental degradation; therefore, their diversity and abundance provide an indication of ecosystem health. The diversity and abundance of EPT taxa could be affected by sediment removal operations because they depend on substrate, water quality, and temperature conditions (NOAA 2004).

The EPT group typically inhabit the interstitial spaces of coarse substrates (i.e., gravel to cobble-sized particles), although some species of mayfly and certain other aquatic insects (e.g., chironomidae) prefer highly organic fine sediments. Sands and silt are the least productive substrates for aquatic macroinvertebrates (Hynes 1970) and are more easily mobilized, making them less suitable because they are less stable. Therefore, sediment intrusion that reduces the interstitial spaces of cobbles and gravel also directly decreases the habitable area for these taxa.

Changes in the biomass and structure of benthic macroinvertebrate assemblages could decrease the vigor of salmonid populations that depend on them. The importance of abundant food sources becomes even greater when stream temperatures are at the upper tolerance limits for steelhead and Chinook salmon. Fish may respond to thermal stress by decreased growth rates and reduced survival. Because food conversion efficiencies decline at elevated temperatures, and metabolic demands increase, fish must eat more food (Smith and Li 1983). Therefore, reductions in food availability caused by streambed sedimentation could compound adverse effects of elevated water temperatures.

Pool Habitats

Pool habitats with depths ranging from 4.3 to 11.2 feet consisted of approximately 26% of the reach in the study area (Syar 2004). These habitats provide important functions for the native fish community, including special-status Chinook salmon and steelhead. Pools provide deep, low-velocity areas with submerged structural elements that provide cover (Brown and Moyle 1991), winter habitat, and flood and thermal refugia for fish. During upstream migrations, adult salmon and steelhead typically move quickly through higher velocity riffles and rapids and pause for varying duration in deep holding pools (NOAA 2004). These holding pools provide salmon and steelhead with safe areas in which to rest when low flows and/or fatigue inhibit their migration. Instream mining projects have the potential to reduce the number and degrade the quality of these habitat elements and thereby reduce the population of salmon and steelhead in the affected river reach.

Absent mitigation, instream mining activities have the potential to result in adverse effects on fundamental physical processes related to pool maintenance. The partial sedimentation of pools during summer low-flow periods and their subsequent scour during winter high-flow periods are widely recognized seasonal processes. During high flows, coarse particles eroded from upstream riffles are transported through pools to downstream riffles. This process occurs because velocity and shear stress increase at pools at a faster rate than at riffles as flow increases toward bankfull (NOAA 2004). As discharge increases, the energy to transport coarse sediment increases in pools at a faster rate than at riffles. A threshold is generally reached when flows exceed about 60% of the effective discharge[3] flow, the pool scour process begins and coarse sediment eroded from upstream reaches could continue through pools to downstream riffles where it may be deposited. The pool scour process becomes most dominant at the effective discharge flow in undisturbed stream channels, as flow depth increases only slightly once the bars or banks are overtopped and the floodplain is inundated (NOAA 2004).

Mining in-channel bars has the potential to reduce or eliminate the convergence of flows through pools, thereby reducing the effectiveness of the scour mechanisms that maintain pools. Reduced confinement of flows could be expressed as an increased width-to-depth ratio of the active channel. Bar skimming for sediment production has the potential to increase the width-to-depth ratio by an order of magnitude or more. As a result, pool maintenance processes can be impaired when bars are removed. Additionally, spacing between pools could increase as a result of bar removal and resulting simplification of the channel (NOAA 2004).

Sediment removal from bars has the potential to create a wider, more uniform channel section with less lateral variation in depth, and reduced convergence of flows that are necessary to maintain pool depth and volume. However, the proposed mining activities include horseshoe skim, alcove, oxbow, and EDSH extraction methods that maintain buffers at the head and along the edge of bars to maintain width-to-depth ratios and resulting convergence of flows and pool scour mechanisms.

As discussed in Chapter 1, “Introduction and Project Description,” Syar proposes buffers of 30 feet or 2.5 times the slope height, whichever is greater, from the outer river bank (top of bank) to the interior edge of skimming areas. The alignment of the summer low-flow channel of the Russian River would be protected by retaining a buffer at the upper one-third of each bar, as well as a buffer along the outer edge of each bar along the low-flow channel measuring approximately 20% of channel width. The project also includes activities that would strengthen the buffer area at the upper one-third of each bar by transplanting riparian vegetation removed from the skimmed areas. Although the proposed methods are designed to prevent impacts on pool habitats, it is possible that these impacts could still occur. The project includes an AMS that would provide a mechanism to monitor pool volume and instream habitats. No specific performance criteria have been identified by Syar to address potential impacts on pool habitat, however.

Impact 3.4-7a The project’s proposed enhancement activities would result in long-term beneficial effects on aquatic habitats and the fish community in the Russian River. The proposed alcoves and oxbows would improve conditions for juvenile rearing and overwintering. The alcoves would also improve connectivity and access to tributaries before filling in over time. The proposed streambank enhancements, oxbows, and alcoves would increase habitat structure and complexity. The streambank enhancements would also increase food production

[3] The effective discharge is defined as the flow that transports the most sediment over the period of record.

and reduce sediment inputs into the river from existing, ongoing bank erosion. This a beneficial impact.

Mitigation Measure

None. The impact of enhancement activities provides both short-term and long-term beneficial impacts to fisheries resources.

Impact 3.4-7b Instream mining and enhancement activities could result in increased turbidity and downstream sedimentation, which could reduce or adversely affect fish habitat and fish populations, including anadromous salmonids and other native and special-status fish species.

As discussed in section 3.4-4 above, the project and other instream mining activities have the potential to adversely affect the function of riffle and pool habitats by indirectly affecting sediment transport and deposition processes. Project effects could include exacerbating sedimentation of the substrates, reducing pool volumes, changing hyporheic[4] flow patterns, reducing habitat complexity and causing barriers to adult migration, diminishing adult holding and juvenile rearing habitats, and reducing benthic macroinvertebrate production.

The project proposes mining horseshoe and EDSH skim extraction methods that would maintain buffers at the head and along the edge of the bar to prevent channel widening and the related physical processes that result in degradation to habitat. The buffers would be established with a setback of 30 feet or 2.5 times the slope height, whichever is greater, from the outer river bank (top of bank) to the interior edge of skimming areas. The alignment of the summer low-flow channel of the Russian River would be protected by retaining a buffer at the upper one-third of each bar, as well as a buffer along the outer edge of each bar along the low-flow channel measuring approximately 20% of channel width. The buffer area would be strengthened at the upper one-third of each bar by transplanting riparian vegetation removed from the skimmed areas. These buffers, with the exception of haul routes, would also be considered “no-equipment” zones intended to protect the river against disturbance during skimming operations.

The project also includes an AMS that would provide a further mechanism to monitor and correct potential effects on riffle and pool habitats associated with changes to sediment transport and deposition processes. The AMS currently lacks performance criteria to mitigate impacts on pool and riffle habitats, and thus, these impacts are potentially significant on a project level.

Mitigation Measures

3.4-7a **Supplement the AMS with Performance Criteria for Riffle and Pool Habitats.** This measure is identical to Mitigation Measure 3.4-5a above, and shall be applied to this impact.

3.4-7b **Supplement the AMS with Performance Criteria for Channel Width.** This measure is identical to Mitigation Measure 3.2-5d in Section 3.2, “Geomorphology, Hydrology and Water Quality,” and shall be applied to this impact.

[4] The hyporheic zone is a region beneath and lateral to a stream bed, where there is mixing of shallow groundwater and surface water.

Impact Significance after Mitigation

Proposed enhancement activities would result in long-term beneficial effects on aquatic habitats and the fish community in the Russian River. These beneficial effects would result from improved conditions for juvenile rearing and overwintering, improved connectivity and access to tributaries, increased habitat structure and complexity, and reduced sediment inputs into the river associated with existing, ongoing bank erosion.

The proposed mining and enhancement activities also could result in increased turbidity and downstream sedimentation, but the project's mining methods, BMPs, AMS, and Mitigation Measures 3.4-6a and 3.4-6b would reduce all such impacts to less-than-significant.

Impact 3.4-7c Instream mining practices could adversely affect the function of riffle and pool habitats through project-related indirect effects on sediment transport and deposition processes. These effects include exacerbating sedimentation of the substrates, reducing pool volumes, changing hyporheic flow patterns, reducing habitat complexity and causing barriers to adult migration, diminishing adult holding and juvenile rearing habitats, and reducing benthic macroinvertebrate production.

Mitigation Measures

Mitigation Measures 3.4-5a and 3.4-5b noted above in the Program Impacts would apply to this impact.

Impact Significance after Mitigation

Mitigation Measures 3.4-5a and 3.4-5b would substantially reduce potential impacts on riffle and pool habitats from project-related indirect effects on sediment transport and deposition processes to a less-than-significant level.

Impact 3.4-8 The project would not result in direct loss of fish, including special-status species, from bridge installation or removal, or enhancement activities.

Syar would install temporary bridges to access sites that are not directly accessible via private roads (e.g., between gravel bars). These bridges would be in place from June 15 to October 15 to limit disturbance within the active stream when sensitive fish species may be present, consistent with NMFS's guidance regarding the placement of crossings. During the remainder of the operating season, skims would occur only on those bars that are directly connected to access roads and do not require temporary bridges. Minor disturbance of the river environment would occur when equipment crosses the river (and enter the wetted stream) only during installation and removal of the temporary bridges.

Temporary bridges would be installed using a railroad flatcar bridge or equivalent structures to provide a minimum of 4 feet clearance above the summer low-flow channel elevation and a 20-foot-minimum span across the waterway. Installation of the bridges would not involve any excavation activities, but would require the placement of a hard material and fill on either side of the channel above the natural grade to form the abutment for the bridge. Only clean, washed gravel would be used as fill in the water for bridge abutments and gravel placed in the river would be pushed out, rather than dropped in the river. Wet crossings of the equipment would be minimized. Before the placement of equipment or gravel, a qualified biologist would be present to inspect the area to ensure that fish would not be affected.

Syar also proposes several river enhancement activities, including bank enhancement that would require work in the wetted channel. The REP includes avoidance and minimization measures that would reduce potential impacts to fish and aquatic habitats, including: conducting all construction activities between June 1 and November 1; conducting pre-construction surveys for special-status species; implementing BMPs; and implementing a series of operational measures for dewatering including a fish salvage and rescue plan.

Because fisheries impact avoidance and minimization measures are required by the County's mining ordinance and included in the project for bridge installation, removal, and enhancement activities, this impact would be less than significant.

Mitigation Measures

None.

Impact 3.4-9 The project could result in the direct loss of fish, including special-status species, from fish stranding on bars that have been mined and/or enhanced.

Proposed mining of bars would include horseshoe skim and EDSH methods. Proposed enhancements include the creation of alcoves, oxbows, and streambank enhancements. The mining and alcove construction methods generally include cut slopes along the interior sides of the skimmed area that would be at a 2:1 ratio, while the cut slopes at the upper end of the skimmed area would be left at a 10:1 ratio to discourage scouring action during overtopping flows (reducing the potential for the initiation of head-cut erosion). The floor of the mined and/or enhanced areas would be excavated with a gradient that is similar to the river and would be open to the low-flow channel on the downstream end to avoid potential fish stranding. The finished grades/topography are intended to guide any potential fish downstream toward the low-flow channel at the downstream end of the bar as flows recede off of the bar after higher flow events. However, there may be cases where the finished bar lacks a horizontal cross-slope and/or longitudinal slope to promote complete and efficient drainage conditions that would limit the potential for fish stranding.

Additionally, at the end of each operating season, Syar would smooth the skimmed and enhanced bars using a motor grader followed by a bulldozer dragging a heavy, long rigid drag. The rigid drag would be 20 feet or longer so that it would span the potential width of depressions and irregularities in the bar. The procedure would further reduce potential ponding of water and any potential fish entrapment after high winter river flows across the bar have subsided.

However, subsequent high-flow events that overtop the bar could result in deposition of fine and coarse sediments in the floor of the mined and/or enhanced areas creating conditions where depressions are formed. After high flows pass over the bars, receding waters could collect in any potential depressions, pond, and become isolated from the river. Fish that enter the mined and/or enhanced portions of the bars during higher flows, particularly juvenile Chinook salmon and steelhead, could become stranded in these areas. Fish that become trapped for long periods of time would experience high mortality rates as a result of lethal water temperatures, poor water quality, predation, and/or desiccation of these areas.

In addition to this potential project-related effect, fish stranding has the potential to occur under existing conditions. In this scenario, depressions (and subsequent ponds) are formed on the bars through natural sediment transport and deposition processes that include scour behind LWD, riparian vegetation, or large boulders, formation and dissolution of temporary secondary channels, and seasonal hydrologic connection and dissolution of tributaries.

Mining methods, end-of-season bar reclamation, and construction of enhancement features would minimize the potential for fish stranding and potentially improve conditions compared to baseline over the short term (i.e., the period from the end of mining season to the time when subsequent high flows overtop the mined area of the bar) at most locations. However, there may be conditions at certain locations where the finished bar lacks a horizontal cross-slope and/or longitudinal slope to promote complete and efficient drainage off of the bar to limit the potential for fish stranding. Further, mining and constructing enhancements on the bars could result in conditions where subsequent high-flow events could result in increases (in the likelihood and magnitude) in the formation of depressions, ponding of water, fish entrapment, and mortality compared to the existing condition. There are no provisions in the AMS to address the potential for substantial increases in fish stranding that could result from the project. This impact would be potentially significant.

Mitigation Measure

3.4-9a **Finish Grade the Floor of the Skimmed Area to Promote Complete Drainage.** End-of-season bar reclamation shall include a finish grade at the floor of the bar with a minimum 0.20% longitudinal slope and a 0.25% horizontal cross-slope gradient that is consistent with recommendations determined by the SRC.

3.4-9b **Supplement the AMS with Actions Addressing Fish Stranding.** As part of the proposed AMS, the following specific actions shall be conducted to address the potential fish stranding impact:

- *Monitoring:* For the first 3 years following the completion of mining at an individual bar, visual surveys of the bar shall be conducted by a qualified biologist (possessing the necessary permits to conduct fish relocation, if needed) after at least one high flow event per year that inundates the mined bar area, and after every high flow event equal to or greater than the 2-year storm. The purpose of these surveys is to identify the extent of any depressions and associated ponded areas that cannot drain to the low-flow channel. Photographic documentation will be conducted, as necessary, to document the condition of the mined bar area.
- *Reporting:* Following each year when monitoring is conducted, a letter report shall be submitted to the SRC summarizing the overall condition (with an emphasis on bar topography and identification of depressions) of the mined bar and any changes that have occurred since the previous report. The report will assess the potential for fish stranding.
- *Performance Criteria:* If depressions or associated ponded areas that cannot drain to the low-flow channel are found, or other conditions exist that could lead to fish stranding, the SRC shall make recommendations to PRMD to correct the situation. Syar shall suspend mining or incorporate changes to the annual mining plan or Reclamation Plan, and/or implement other remediation, to meet these criteria. The ultimate goal is that the mined bar and associated drainage features (e.g., horseshoe skim, alcoves, oxbows) function naturally to provide beneficial floodplain/bar habitat conditions with minimal human intervention and maintenance.

Impact Significance after Mitigation

Mitigation Measure 3.4-9a and 3.4-9b would reduce the potential fish stranding impact to a less-than-significant level.

Impact 3.4-10 The project could result in substantial loss or degradation of overhead cover and instream woody material from skimming activities and post-mining processes.

The presence of riparian vegetation and SRA habitat adjacent to the low-flow channel and within the floodplain contributes to morphological stability, habitat complexity, and cover in several ways. Vegetation, particularly when it is mature, provides root structure that consolidates the substrate material and resists erosion forces (Beschta 1991). By enhancing the form of gravel bars, vegetation enhances the frictional resistance of the bar that acts to dissipate hydraulic energy (Kondolf 1997). This decreases the effective channel gradient, moderates flow velocities, and prevents undue erosion downstream. As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat consisting of LWD, which in turn furnishes complex structure and shelter that provides refugia from predators, creates velocity gradients, and provides habitat for aquatic benthic macroinvertebrates (NOAA 2004).

Instream sediment removal projects have the potential to cause direct or indirect destruction of riparian vegetation along bars, streambanks, and the floodplain. If not avoided, annual skimming would remove riparian vegetation that would otherwise colonize gravel bar and floodplain surfaces. In the stream reaches that are not confined by levees or naturally resistant boundaries, long-term or repeated modification of gravel bars at low elevations promotes frequent channel shifting, which precludes the establishment of riparian vegetation. In the absence of this disturbance, this vegetation would have the potential to grow and develop through several stages of ecological succession.

Riparian vegetation could also be adversely affected by the removal of LWD on bars and the floodplain during sediment removal activities (OWRRI 1995). LWD often protects and enhances the reestablishment of vegetation in streamside areas because it influences hydraulics and disrupts sediment transport (NOAA 2004). Sediment extraction could also remove portions of undercut banks, thereby decreasing vegetative bank cover, reducing shading and resulting in increased water temperatures. Increased water temperatures are of particular concern, given that salmon and steelhead prefer relatively coldwater habitats.

The project includes several activities and measures designed to prevent the loss or degradation of riparian vegetation, overhead cover, and instream woody debris. As discussed in Chapter 1, "Introduction and Project Description," these activities include removal and relocation of LWD, removal of giant reed and other invasive species, avoidance of large stands of riparian vegetation, transplanting and monitoring of riparian vegetation, and revegetation of areas affected by mining activities (bars and floodplains). Further, the proposed *Draft Russian River—Alexander Valley River Enhancement Plan for Syar Industries Reach (Gill Creek Confluence to Jimtown Bridge)* (Syar 2008) includes aquatic habitat enhancement through the placement of LWD and minimum of 11 acres of riparian forest planting. A minimum of six acres of riparian forest would be planted in conjunction with the creation of alcoves and oxbows and a minimum of five additional acres of would planted in other areas on the bars.

The proposed AMS would provide a further mechanism to ensure that loss or degradation of riparian vegetation would not occur on the extraction bars and/or floodplain through monitoring and evaluation of results against performance criteria. In addition, Mitigation Measure 3.3-8 in

Section 3.3, "Vegetation and Wildlife" would supplement the AMS by providing the procedures on how transplantation would occur.

However, absent mitigation, the project and AMS would not necessarily prevent the loss or degradation of riparian vegetation that could result from bank erosion, channel instability, or channel widening. Because loss or degradation of riparian vegetation, overhead cover, and instream woody debris could result from project-related bank erosion, channel instability, or channel widening, this would be a potentially significant impact.

Mitigation Measures

3.4-10a **Supplement the AMS with Performance Criteria for Bar Area.** This measure is identical to Mitigation Measure 3.2-5c in Section 3.2, "Hydrology and Water Quality," and shall be applied to this impact. This measure would protect against loss of overhead cover and instream woody material by providing protection of the bar area (where the cover and woody material exists).

3.4-10b **Supplement the AMS with Performance Criteria for Channel Width.** This measure is identical to Mitigation Measure 3.2-5d in Section 3.2, "Hydrology and Water Quality," and shall be applied to this impact. This measure would protect against loss of overhead cover and instream woody material by providing protection of the banks (where the cover and woody material exists).

3.4-10c **Supplement the AMS with Performance Criteria for Riparian Vegetation.** This measure is identical to Mitigation Measure 3.3-8 in Section 3.3, "Vegetation and Wildlife," and shall be applied to this impact.

Impact Significance after Mitigation

Mitigation Measures 3.4-10a through 3.4-10c would reduce the remaining potential impacts on riparian vegetation, overhead cover, and instream woody debris to a less-than-significant level.

Impact 3.4-11 Project-related activities could result in the release and exposure of contaminants, resulting in adverse effects on aquatic habitats, the aquatic food web, and fish populations, including special-status species, within the study area and in areas downstream of project mining and enhancement activities.

The potential exists for contaminants such as fuels, oils, hydraulic fluids, and other petroleum products used in mining and construction equipment to be introduced accidentally through spills into the waterway directly or incrementally through surface runoff from haul routes and staging areas. Contaminants in sufficient concentrations would be toxic to fish and prey organisms (e.g., benthic macroinvertebrates) occupying study area habitats or may alter oxygen diffusion rates and cause acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival and/or leading to mortality. Please refer to Section 3.11, "Hazards and Hazardous Materials," for a discussion of potential effects associated with the accidental release of hazardous materials into the river.

Impact Conclusion

The potential release of hazardous materials into the Russian River could result in the reduction of aquatic habitats and fish populations if proper procedures are not implemented to contain the discharge. Potential impacts associated with the accidental release of hazardous materials and the consequent impact on aquatic habitat and fish populations would be potentially significant.

Mitigation Measure

3.4-11 **Develop (Update) and Implement Spill Prevention Fueling and Lubrication Plan (SPLP).** This measure is identical to Mitigation Measure 3.11-1 in Section 3.11, "Hazards and Hazardous Materials," and shall be applied to this impact.

Impact Significance after Mitigation

Mitigation Measure 3.11-1 would reduce potential impacts associated with the accidental release of hazardous materials, which would in turn reduce the potential for the direct loss of fish habitat or fish populations, to a less-than-significant level.

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3.5 CULTURAL RESOURCES

This section describes background research completed for the project. The information presented here was gathered from a cultural resources background record search as well as a field visit to several of the bars proposed for mining. The study area is located within Township 9-10 North, Range 8-9 West, as depicted on the Jimtown and Geyserville 7.5-minute U.S. Geological Survey (USGS) quadrangle maps.

A. Setting

PREHISTORIC SETTING

In the early 1970s, Fredrickson (1973, 1974) proposed a sequence of cultural manifestations or patterns for the central districts of the North Coast Ranges, placing them within a framework of cultural periods he believed were applicable to California as a whole. These different cultural modes could be characterized by:

- similar technological skills and devices (specific cultural items);
- similar economic modes (production, distribution, consumption), including especially participation in trade networks and practices surrounding wealth (often inferential);
- similar mortuary and ceremonial practices.

The region's cultural patterns are associated with specific temporal periods, as follows:

- Paleo-Indian Period (10,000 B.C. to 6000 B.C.)
- Lower Archaic Period (6000 B.C. to 3000 B.C.)
- Middle Archaic Period (3000 B.C. to 1000 B.C.)
- Upper Archaic Period (1000 B.C. to A.D. 500)
- Emergent Period (A.D. 500 to 1800)

The Russian River has been used as a natural pathway for Native Americans since prehistoric times. The possibility of discovering permanent and/or seasonal inhabitation sites and associated artifacts within the Russian River floodplain is great. Centuries before settlement by the Europeans, groups of native peoples inhabited village communities throughout Sonoma County (Sonoma County 1994). Pomo, Wappo, or Miwok, lived in the region for several thousand years, passing their cultures from generation to generation in oral traditions, complex ceremonies, and among Pomos, in the demanding art of basket weaving.

The Pomo utilized the abundant resources of the Russian River floodplain, creating milling surfaces on rock faces, and establishing permanent settlements along the river and at the confluence of the Russian River and small tributaries (Sonoma County 1994). Because of this use, there is a high probability of encountering significant archaeological sites within the area. Artifacts that may be encountered include portable artifacts such as mortars, metate, bowls, ornaments, obsidian points, and scatter. Evidence of permanent camps includes fire-affected rocks, midden deposits, house pits, grave sites, and associated grave goods.

Early Native Americans in the region relied on hunting an important source of food and raw material. Later, a subsistence system based on plant foods and products gradually became dominant. The economic system became more diversified through time, with the gradual changes in technological and social institutions.

ETHNOGRAPHIC SETTING

The study area lies near the intersection of lands that were controlled by three separate ethnographic groups at the time of European contact, the Wappo, Southern Pomo, and Coast Miwok. The study area lies within the Wappo sphere of influence, although each group may have shared some access to the region (Beard 1997).

The Wappo language included five dialects (Sawyer 1978), distributed across two major territorial divisions. The smaller area included lands on the southern edge of Clear Lake; the larger ranged from just north of Napa and Sonoma up to Cloverdale and Middletown. The Wappo were known to readily adopt words from other languages spoken in their vicinity and, interestingly, gave at least one village a name that is still in use, cho*nóma, meaning “abandoned camp” (Sawyer 1978). Another triblet, Wilikos, was described by Barrett (1908) as being located at the head of Sonoma Creek.

The Wappo lived in villages usually located on a creek or other water source. Villages included one or two sweathouses as well as houses of varying size. Village chiefs might be elected or appointed based on the organization of the individual village. Some villages even had multiple chiefs, each with different spheres of influence (Sawyer 1978). Seasonal travel to Clear Lake, the Russian River, the Pacific coast, and Napa Glass Mountain was common.

HISTORIC SETTING

The region in and around the Mayacamas Mountains was sparsely populated and little-used historically because of steep hills, narrow canyons, and difficulty of access (Lortie 1979). American and immigrant settlement in the area began in the mid-19th century, with some homestead patents or claims being filed in the 1870s. Other historic uses of the area included marginal agriculture, charcoal production, and recreation in later years.

The earliest visitors to the Marin-Sonoma coast were English and Spanish sailors, including Juan Rodriguez Cabrillo in 1542, Drake in 1579, and Cermeño in 1595. Cermeño’s ship, in fact, was wrecked in Drakes Bay. The British and Spanish did not engage in overland explorations, or even thorough exploration of Drake and Bodega Bays, until the late 18th century. Russian seal and sea otter hunters from Alaska made covert poaching trips to Bodega Bay in the early 19th century. They eventually established Fort Ross in 1812, 12 miles north of the mouth of the Russian River. Although they continued to hunt sea mammals, a small agricultural community was also established, growing fruits, grains, and livestock for settlements in Alaska. These holdings were sold to John Sutter in 1841, after the seal and otter populations had dwindled to unprofitability.

Spanish exploration in the area included attempts to settle the Petaluma and Santa Rosa regions, using natives to labor on the land grant ranchos in the region. Several of these Mexican land grants border the Russian River, including the *Bodega* grant, *Canada de Jonive*, *Molinos*, *Sotoyome*, *Tzabaco*, *Caslamayomi*, and *Rincon de Musalacon*. The study area abuts the historic *Tzabaco*, *Caslamayomi, and Sotoyome* land grants (see records search results).

The Alexander Valley and Russian River floodplain have traditionally been used for agriculture. Railroads, including the San Francisco & Northwestern Pacific, were built along the valley to accommodate shipment of produce, as well as timber mills and stone quarries (Sonoma County 2006). Artifacts relating to historic uses described above could include building materials and foundations, and railroad-associated materials.

BACKGROUND RESEARCH

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System in May 2007. The NWIC records search included examination of the following resources:

- The State Office of Historic Preservation's Historic Property Directory and Determination of Eligibility
- The National Register of Historical Places and California Register of Historical Resources (CRHR)
- California Inventory of Historical Resources
- The following historic maps:
  - 1874, 1876, 1894, 1901, and 1926 General Land Office plat maps
  - 1858 Rancho Tzabaco plat map
  - 1857 Rancho Sotoyome plat map
  - 1867 A. B. Bowers map of Sonoma County
  - 1877 Thos. H. Thompson & Co. historical atlas map of Sonoma County
  - 1898 Reynolds & Proctor *Illustrated Atlas of Sonoma County, California*
  - 1920 U.S. Army Corps of Engineers (USACE) tactical map, Healdsburg Quadrangle

None of the historic maps included by the NWIC depicted any development in the vicinity of the Russian River.

The NWIC reported that several cultural resources inventories have been conducted at least partially within the study area (Table 3.5-1). No cultural resources were identified during those efforts. Limited surveys have been completed within the study area, however. Based on the studies conducted to date, the study area appears likely to have few if any known cultural resources of significance.

Table 3.5-1
Cultural Resources Studies Conducted in the Study Area

NCIC Report #	Author	Title	Date
969	Eric McGuire	*Archaeological and Historical Review—Geyserville Project*	1976
1030	Robert J. Jackson	*An Archaeological Investigation of the Preferred Vineyards Proposed Subdivision Property, 2001 SR 128, Geyserville, Sonoma County, County File MS-6484*	1978
1039	John F. Hayes	*An Archaeological Survey of the Fay Property, Geyserville, Sonoma County, California*	1978
8968	Leigh Jordan	*An Archaeological Study of the Murphy-Goode Winery Property at 3740 SR 128, Geyserville, Sonoma County, California APN 131-060-25*	1987
30495	Thomas M. Origer	*A Cultural Resources Survey of Four Properties Owned by Clos du Bois, Geyserville, Sonoma County, California*	2005

Source: Data provided by the Northwest Information Center, Sonoma State University, Rohnert Park, in 2007

Field Visit

On May 7, 2007, EDAW archaeologist Loren Huddleston visited the study area and conducted a partial cultural resources inventory. A boat trip along the Russian River was required to access the gravel bars specified for mining and to complete the inventory. The float began across the river from Bar S-13, and continued downstream to Bar SD-4. Stops were made on each gravel bar, and Bars S-13 through SD-4 were closely inspected through a pedestrian survey where transects were spaced at no more than 30-meter intervals; survey methods were consistent with the *Secretary of the Interior's Standards and Guidelines for Identification of Cultural Resources* (48 Code of Federal Regulations [CFR] 44720–44723). Visibility along the gravel bars was 100%, but areas along the riverbank had limitations imposed by grasses and other vegetation, decreasing visibility to around 70%. Even with decreased visibility in these areas, coverage and visibility were optimum and all areas on and along each gravel bar were fully inspected for cultural resources. Because the river and floodplain are active depositional environments and may bury or obscure archaeological evidence, exposed cut banks, animal burrows, and any point of convergence with the river and smaller streams were also closely inspected for evidence of subsurface cultural deposits. No prehistoric or historic artifacts or sites were encountered during the cultural inventory.

In the absence of prehistoric and historic resources, the inventory was limited to observations of decidedly modern cultural intrusion associated with mining and flood control maintenance. These include two buildings from a defunct gravel mining company located northeast, and across the river from Bar S-13, and a large piece of mining equipment remains along the riverbank near Bar S-7. Also, at several points along the river (in the channel, along the bank, and on Bar S-9), remnants of a USACE bank stabilization project are visible. These appear as the remains of steel girder, riprap "jacks." Some of these jacks are strung together with steel cables and anchored along the bank, but most are broken, out of placement, and lie as solitary river hazards. These structures were washed out by a flood in 1963 or 1964. Other evidence of this flood activity includes corroded fragments of metal and river-worn bits of glass that were observed in sparse quantities on several of the bars, and a complete 1950s Buick that remains in the trees near the Geyserville Bridge. Based on the field visit, no apparent cultural resources sites of potential significance evident in the floodplain and proposed point bars on mining sites exist.

B. Regulatory Framework

STATE REGULATORY ISSUES

California Environmental Quality Act

CEQA offers directives regarding impacts on historical resources and unique archaeological resources. The State CEQA Guidelines define a "historical resource" to include more than one category of resources. The first category is "resource(s) listed or eligible for listing on the California Register of Historical Resources (CRHR)" (Title 14, Section 15064.5[a][1] of the California Code of Regulations [i.e., 14 CCR Section 15064.5(a)(1)]; see also Public Resources Code Sections 5024.1 and 21084.1). A historical resource may be eligible for inclusion in the CRHR, as determined by the State Historical Resources Commission or the lead agency, if the resource:

- is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or

- is associated with the lives of persons important in our past; or
- embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

In addition, a resource is presumed to constitute a "historical resource" if it is included in a "local register of historical resources" unless "the preponderance of evidence demonstrates that it is not historically or culturally significant" (14 CCR Section 15064.5[a][2]).

In addition to the obligation to consider impacts on "historical resources," CEQA and the State CEQA Guidelines require consideration of unique archaeological sites (Public Resources Code Section 21083.2, 14 CCR Section 15064.5). A "unique archaeological resource" is defined in CEQA (Public Resources Code Section 21083.2[g]) as:

> …an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
>
> (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
>
> (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The State CEQA Guidelines (14 CCR Section 15064.5[e]) require that excavation activities be stopped whenever human remains are uncovered, and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission (NAHC) must be contacted within 24 hours. At that time, the State CEQA Guidelines (14 CCR Section 15064.5[d]) direct the lead agency to consult with any appropriate Native Americans as identified by the NAHC in a timely manner, and direct the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

LOCAL REGULATORY ISSUES

Excerpts from the Open Space Element of the *Sonoma County General Plan* that are relevant to the project are listed below.

Goal OS-9: Preserve significant archaeological and historical sites which represent the ethnic, cultural and economic groups that have lived and worked in Sonoma County.

Objective OS9.3: Encourage preservation of archaeological resources by reviewing all development projects in archaeologically sensitive areas.

Policy OS-9f: Refer applications for discretionary permits to the Northwest Information Center to determine if a study area might contain archaeological or historical resources. If a site is likely to have these resources, require a field survey and include mitigation measures if needed. Discourage paving over resources.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the CEQA Guidelines and Division 13 of the California Public Resources Code, a project would typically have a significant impact if it would:

- cause a substantial adverse change in the significance of a unique archaeological resource or an historical resource as defined in Section 21083.2 of CEQA and Section 15064.5 of the State CEQA Guidelines, respectively;
- disturb any human remains, including those interred outside of formal cemeteries; or
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

The State CEQA Guidelines (14 CCR Section 15064.5) define "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

PROJECT IMPACTS

Findings in the ARM Plan PEIR

The PEIR evaluated potential impacts on cultural resources were evaluated in Section 8.15, "Cultural Resources". The PEIR determined that adverse impacts could occur on these resources as a result of ground clearing, aggregate removal or associated processing, transportation activities, and reclamation and enhancement activities. Implementation of identified mitigation measures (including reviewing the use permit application and implementing procedures upon discovery of cultural resources) would reduce potential impacts to less-than-significant levels.

Project Impacts

This section addresses potential impacts associated with the discovery of unrecorded or unknown cultural resources, as no cultural resource sites of potential significance were evident in the floodplain or proposed gravel bars within the study area.

Impact 3.5-1 Mining activities and enhancements during project implementation could result in the loss of as-yet-unknown cultural resources, including human remains.

Mining activities and enhancement (e.g., any method of skimming, riparian or aquatic enhancements) on the gravel bars are not expected to affect cultural resources. Any evidence of Native American or historic use between the banks of the Russian River would likely be only ephemeral because of annual flooding disturbance. More permanent evidence of past land use is more likely to be seen above the river, on the terraces adjoining the river. Evidence of prehistoric use and occupation of these areas might take the form of bedrock mortars, occupation midden, remnants of tool manufacture, or Native American burials. Historic uses might have included habitation, agriculture, or mining. These resources would most likely be encountered during activities that disturb the riverbanks, including installation of access roads, enhancement activities, and staging areas. In addition, human remains, in particular from any Native American occupation sites that might be found along the banks of the Russian River, may be uncovered during ground-disturbing activities within the riverbank. Depending on the nature of any cultural resources encountered, impacts would be potentially significant.

Mitigation Measures

3.5-1a **Reduce Potential Impacts on Cultural Resources Through Preoperation Worker Education, and Archaeological Field Surveys, and Cease Work If Resources Are Encountered.** During the pre-mining worker training, machine operators and their supervisors shall be alerted to the possibility of finding buried cultural resources. Mining bars and access areas not examined by the archaeologist on the May 7, 2007 field visit (Bars S-14, SD-2, and SD-1, and all access roads leading to the bars) shall be surveyed for cultural resources by a qualified professional archaeologist before the commencement of any ground-disturbing activity. Should any historic-era cultural resources, such as structural features, artifacts, historic debris, or architectural remains be encountered during any mining activities, work shall be suspended within 50 feet of the specific location at which the suspected resources have been uncovered, and PRMD shall be immediately contacted. At that time, Syar shall retain a professional archaeological consultant who shall conduct a field investigation of the specific site and recommend mitigation for the protection or recovery of any cultural resources concluded by the archaeologist to represent significant or potentially significant resources (as defined by CEQA). The lead agency shall ensure that the mitigation is implemented before the resumption of mining activities at the location of the find. This mitigation is consistent with mitigation identified in Section 8.15 of the ARM Plan.

In the event that archaeological features such as pottery, arrowheads, midden, or culturally modified soil deposits are discovered at any time during grading, scraping, or excavation within the project, all work shall be halted in the vicinity of the find and PRMD Project Review staff shall be notified and a qualified archaeologist shall be contacted immediately to make an evaluation of the find and report to PRMD. PRMD staff may consult and/or notify the appropriate tribal representative from tribes known to PRMD to have interests in the area. Artifacts associated with prehistoric sites include humanly modified stone, shell, bone, or other cultural materials such as charcoal, ash, and burned rock indicative of food procurement or processing activities. Prehistoric domestic features include hearths, firepits, or house floor depressions, whereas typical mortuary features are represented by human skeletal remains. When contacted, a member of PRMD Project Review staff and the archaeologist shall visit the site to determine the extent of the resources and to develop and coordinate proper protection/mitigation measures required for the discovery. PRMD may refer the mitigation/protection plan to designated tribal representatives for review and comment. No work shall commence until a protection/mitigation plan is reviewed and approved by PRMD Project Review staff. Mitigation measures may include avoidance, removal, preservation, and/or recordation in accordance with California law. Archaeological evaluation and mitigation shall be at the applicant's sole expense.

Native American contact actions such as those outlined in Mitigation Measure 8.15-1 of the ARM Plan PEIR shall be modified to contact PRMD or currently appropriate groups or individuals at the time cultural resource discoveries are made.

3.5-1b **Stop Potentially Damaging Work if Human Remains Are Uncovered During Mining Activities.** During the pre-mining and enhancement activity worker training, machine operators and their supervisors shall be alerted to the possibility of finding buried human remains. In addition, in accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, Syar shall immediately halt potentially damaging excavation in the area of the burial and notify the Sonoma County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code, Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code, Section 7050[c]). Following the coroner's findings, the property owner, Syar, an archaeologist, and the NAHC-designated Most Likely Descendant (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code.

Upon the discovery of Native American remains, Syar shall ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. Public Resources Code Section 5097.9 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. The following is a list of site protection measures that Syar shall employ to the extent possible:

(1) Record the site with the NAHC or the appropriate Information Center.

(2) Submit a document to the county in which the property is located.

Syar or its authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify an MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. Syar or its authorized representative may also re-inter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to Syar. Syar shall be required to implement any mitigation deemed necessary for the protection of the burial remains. Mining activities in the vicinity of the burials shall not resume until the mitigation is completed.

Impact Significance after Mitigation

Implementation of Mitigation Measure 3.5-1a would reduce the impact of mining-related activities at the study area on undiscovered/unrecorded cultural resources to a less-than-significant level. Implementation of Mitigation Measure 3.5-1b would reduce the impact of mining-related activities at the study area on human remains to a less-than-significant level.

Impact 3.5-2 Mining activities during project implementation would not result in the loss of as-yet-unknown paleontological resources.

Mining and enhancement activities would be restricted to stripping the upper portions of gravel bars, which are formed by the accumulation of gravels displaced from numerous upstream resources. As a result, impacts on paleontological resources resulting from mining and enhancement activities on the Russian River would be less than significant.

Mitigation Measures

None

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3.6 TRAFFIC AND CIRCULATION

This section discusses the circulation impacts of the project on the surrounding street system, along the access routes between the mining extraction sites and the Syar aggregate plant in Healdsburg. Specific attention was given to the connections from private roads to those under the jurisdiction of the Sonoma County (County) and/or the City of Healdsburg.

A. Setting

LOCAL AND REGIONAL ROADWAY SYSTEM

The project is located in and along the Russian River in Sonoma County generally east of the community of Geyserville. Figures 1-1 through 1-4 in Chapter 1, "Introduction and Project Description," show the local and regional roadway system and the proposed private and public truck routes in the vicinity of the study area. A primary haul route is identified for each of the gravel bars. All of the routes access the bars from U.S. Highway 101 (U.S. 101) along County and local community roadways.

U.S. 101

U.S. 101 consists of two travel lanes in each direction in the Geyserville and Healdsburg area near the access routes to the Russian River. The Syar processing plant is accessed via the Old Redwood Highway/Healdsburg Avenue interchange on U.S. 101. The plant is located between Healdsburg Avenue and U.S. 101 just north of the interchange. According to Caltrans Traffic and Vehicle Data System, the average daily traffic volume on U.S. 101 is about 53,000 vehicles per day near the Syar plant at the southern end of Healdsburg and 27,000 vehicles just north of the U.S. 101/Canyon Road interchange. The posted speed limit is 65 mph throughout the access area.

State Route 128

State Route (SR) 128 has one travel lane in each direction and connects U.S. 101 at Canyon Road in Geyserville to SR 29 in Calistoga southeast of the study area. SR 128 is located east of the Russian River between Alexander Valley Road to the south and the Geyserville Bridge at the north end of the mining area. The posted speed limit is 45 mph through the access area.

Banti Lane

Banti Lane is a short local road that extends south of Geyserville Avenue just east of the U.S. 101/Geyserville interchange. Banti Lane is utilized as part of Haul Route 4. At its southern terminus, Banti Lane is a private gravel road.

Bill Ferguson Road

Bill Ferguson Road is a short undeveloped two-lane rural roadway that extends north of Geyserville Avenue between Lytton Springs Road and the City of Geyserville. About 600 feet north of Geyserville Avenue, the roadway becomes gravel and crosses the former Northwestern Pacific railroad tracks. The crossing is narrow and the tracks are elevated approximately 10 feet above the roadway. Bill Ferguson Road is a private road near its northern terminus.

Canyon Road

Canyon Road is a paved roadway that has one travel lane in each direction and connects Geyserville Road to the U.S. 101 access ramps. A length of not more than 800 feet would be utilized as a portion of haul routes 6, 7, and 8.

Geyserville Avenue

Geyserville Avenue is a local two-lane rural roadway, adjacent to and east of U.S. 101. It stretches from Lytton Springs Road on the south to Barilani Road near the community of Asti north of Geyserville. The posted speed limit is 45 mph.

Hamilton Lane

Hamilton Lane is a short local two-lane gravel roadway that extends north of Geyserville Avenue in the City of Geyserville south of SR 128. About 600 feet north of Geyserville Avenue, the roadway crosses the former Northwestern Pacific railroad tracks. Haul route 5 uses Hamilton Lane.

Hassett Lane

Hassett Lane is a two-lane rural road that extends north of Lytton Station Road. It is roughly parallel to U.S. 101. Route 2 uses Hassett Lane.

Healdsburg Avenue

Healdsburg Avenue is a major roadway serving Healdsburg. It is a two-lane roadway with a posted speed limit between 25 and 35 mph. Healdsburg Avenue near its southern terminus would be utilized to carry project traffic between the Healdsburg Avenue/U.S. 101 interchange and the Syar Plant.

Independence Lane

Independence Lane is a paved roadway that has one travel lane in each direction and connects Geyserville Avenue to the U.S. 101 access ramps. A length of not more than 700 feet would be utilized as a portion of haul route 3.

Lytton Springs Road

Lytton Springs Road is a paved roadway that has one travel lane in each direction and connects Lytton Station Road (Healdsburg Avenue) to the U.S. 101 access ramps. A length of not more than 1000 feet would be utilized as a portion of haul route 2.

Lytton Station Road

Lytton Station Road is a two-lane local road that extends from Healdsburg Avenue to Alexander Valley Road farther to the east. Lytton Station Road is roughly parallel and north of Alexander Valley Road for most of its length. Route 2 would run along Lytton Station Road from Hassett Lane to Healdsburg Avenue. This segment includes a 90-degree curve along Lytton Station Road.

Olivier Road

Olivier Road is a short underdeveloped two-lane rural roadway that traverses east from the northern termination of Hassett Lane to the Russian River at the west. Route 2 utilizes Olivier Road from Hassett Lane to approximately 800 feet west where it intersects with a private road running northwards.

River Road

River Road is a two-lane rural roadway east of the Russian River that intersects with SR 128 near the Geyserville Bridge. River Road proceeds north of SR 128 and terminates near Gill Creek. The posted speed limit for River Road varies from 20 to 45 mph.

Private Access Routes

Generally, private roads used to access the proposed bars are not paved. Most of these roads are composed of either loose gravel or dirt. On Geyserville Avenue north of Canyon Road, the access points have some limited paving on the approaches to Geyserville Avenue.

Bicycle Facilities

The Sonoma County Bikeways Plan (Sonoma County Bicycle and Pedestrian Advisory Committee 1997) establishes as a goal to provide a safe and supportive environment for bicycle transportation providing standards for bike facilities and identifying improvements. Bikeways are designated according to the physical characteristics of the facility.

Class I bikeways are paved pathways that are separated and generally inaccessible to vehicular traffic. Class II bikeways are those provided along roadways and marked along the edge of the vehicular travel way. Class III bikeways are designated and mapped along streets that satisfy minimum design criteria but where vehicular traffic is otherwise normal.

The Sonoma County Bikeways Plan describes a proposed class II bikeway that is located continuously along the U.S. 101 corridor on Geyserville Avenue from Lytton Springs Road at the southern end of the project extent (Haul Route 2) to Kelly Road north of the project site. These roadways have been identified as proposed improvement projects to receive class II bikeway upgrades and shoulder improvements.

Railroad Crossings

All of the proposed haul routes cross over railroad tracks owned by the North Coast Railroad Authority (NCRA). The crossing on route 2 is a public roadway crossing located on Lytton Springs Road just west of Healdsburg Avenue. This crossing is equipped with lighted warning signals. The crossings on routes 3, 4, 5, 6, 7, and 8 are private road crossings located along the private access routes currently used to access vineyard parcels or homes, and are signed with stop signs.

There is currently no active rail service within the project limits. However, Sonoma Marin Area Transit (SMART) plans to open commuter rail service to Cloverdale in 2014 on the NCRA tracks. (SMART 2009). NCRA also hopes to resume freight service within the timeframe for the project (Peltz, pers. comm. 2009).

ANALYSIS INTERSECTIONS

Fifteen intersections were selected for analysis because they would be used by project-generated traffic. These locations are identified in Figure 3.6-1 and listed below. Figure 3.6-1 also shows the access routes to the gravel bars.

1. U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway
2. U.S. 101 northbound off-ramp at Healdsburg Avenue/Old Redwood Highway
3. U.S. 101 southbound off-ramp at Lytton Springs Road
4. U.S. 101 northbound off-ramp at Lytton Springs Road
5. Healdsburg Avenue at Lytton Springs Road
6. U.S. 101 southbound off-ramp at Geyserville Avenue
7. U.S. 101 northbound off-ramp at Geyserville Avenue
8. Geyserville Avenue at Banti Lane
9. Geyserville Avenue at Hamilton Lane
10. U.S. 101 southbound off-ramp at Canyon Road
11. U.S. 101 northbound off-ramp at Canyon Road
12. Geyserville Avenue at Canyon Road
13. Geyserville Avenue at access to Route 6
14. Geyserville Avenue at access to Route 7
15. Geyserville Avenue at access to Route 8

Each of the access routes to the proposed gravel bars would use one or more of the analysis intersections. The intersections used by each route are listed below. The route previously designated as Route 1 is no longer under consideration.

- Route 2—intersections = 1, 2, 3, 4, 5
- Route 3—intersections[1] = 1, 2
- Route 4—intersections = 1, 2, 6, 7, 8
- Route 5—intersections = 1, 2, 6, 7, 8, 9
- Route 6—intersections = 1, 2, 10, 11, 12, 13
- Route 7—intersections = 1, 2, 10, 11, 12, 13, 14
- Route 8—intersections = 1, 2, 10, 11, 12, 13, 14, 15

[1] Route 3 accesses the U.S. 101 ramps at Geyserville Avenue near Independence Avenue, including both the northbound and southbound ramp intersections. The existing traffic volumes at these locations were observed to be very low at both intersections and operating at LOS A or B during the weekday peak hours. Therefore, traffic counts were not conducted and these intersections were not included in the analysis.

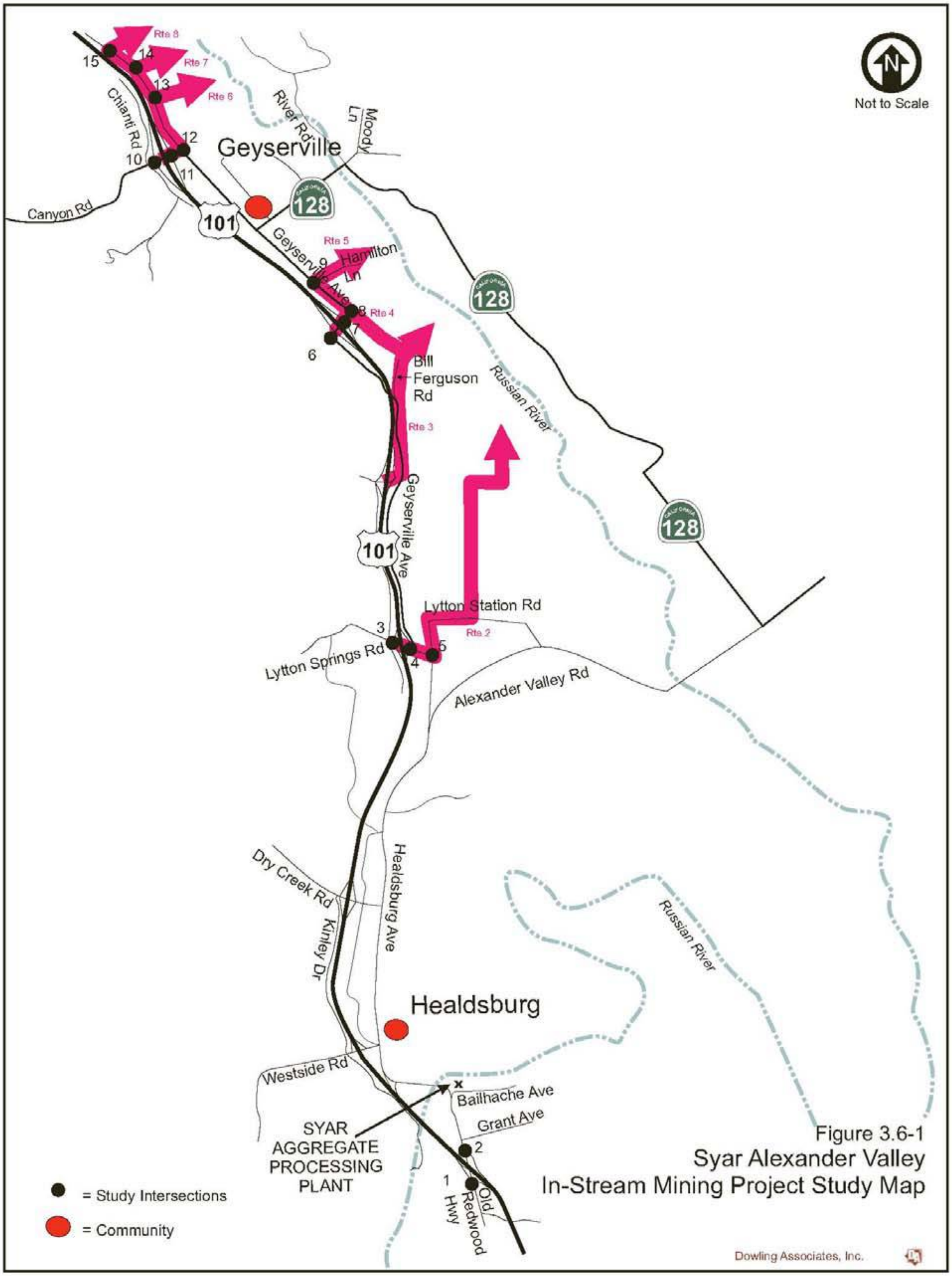

Figure 3.6-1
Syar Alexander Valley
In-Stream Mining Project Study Map

EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE

Traffic conditions on roads and at intersections are generally characterized by their level of service (LOS). LOS is a convenient way to express the ratio between volume and capacity on a given road segment or at a given intersection, and is expressed as a letter grade ranging from LOS A through LOS F. Each level of service is generally described as follows:

- *LOS A:* Free-flowing travel with an excellent level of comfort and convenience and freedom to maneuver.
- *LOS B*: Stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom.
- *LOS C*: Stable operating conditions, but the operation of individual users is substantially affected by the interaction with others in the traffic stream.
- *LOS D*: High-density, but stable flow. Users experience severe restrictions in speed and freedom to maneuver, with poor levels of comfort and convenience.
- *LOS E:* Operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.
- *LOS F:* Forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion.

INTERSECTION LEVEL-OF-SERVICE CRITERIA

Intersections, rather than roadway segments, are generally the capacity-controlling locations for a roadway network. The existing and projected intersection operations have been analyzed using the Transportation Research Board’s 2000 *Highway Capacity Manual* LOS computation methodologies for both signalized and stop-controlled intersections. The TRAFFIX™ software package was employed to assist in the computation.

The LOS computation for signalized intersections is based on the average amount of vehicle delay at all intersection approaches. For unsignalized (stop sign–controlled) intersections, the LOS computation is based on the duration of delay for the worst approach. The thresholds for the LOS are shown in Table 3.6-1. As shown in the table, LOS A represents very slight or no delay, LOS E represents intolerable delay (up to several signal cycles), and LOS F represents excessive delay.

The standards of significance that relate to all Level of Service criteria are discussed in subsection 3.6-C, “Potential Impacts and Mitigation Measures.”

ROADWAY LEVEL-OF-SERVICE CRITERIA

Roadway levels of service are determined by comparing one-way peak hour volumes against thresholds established in Table CT-2 of the 1989 Sonoma County General Plan. The thresholds determine the maximum volume at which a roadway operates at LOS C or better and the maximum at which it operates at LOS D. Table 3.6-2 reproduces the thresholds from the General Plan.

Table 3.6-1
Intersection Level of Service Thresholds

LOS	Delay	Signalized Average Delay (seconds)	Unsignalized Average Delay (seconds)
A	Very slight or no delay. If signalized, conditions are such that no approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.	≤10	≤10
B	Slight delay. If signalized, an occasional approach phase is fully utilized.	>10 and ≤20	>10 and ≤15
C	Acceptable delay. If signalized, a few drivers arriving at the end of a queue may occasionally have to wait through one signal cycle.	>20 and ≤35	>15 and ≤25
D	Tolerable delay. Delays may be substantial during short periods, but excessive backups do not occur.	>35 and ≤55	>25 and ≤35
E	Intolerable delay. Delay may be great—up to several signal cycles.	>55 and ≤80	>35 and ≤50
F	Excessive delay	>80	>50

Note: LOS = level of service
Source: Transportation Research Board 2000

Table 3.6-2
Peak Hour Level-of Service Criteria for Roadway Segment

Type Facility	Lanes	Max. Vehicles per Hour in Heavier Direction	
		LOS C Thresholds	LOS D Thresholds
Rural Road	1	100	120
Rural Road (w/ good geometrics)	2	1,000	1,200
Residential Street	2	80	140
Major Collector	2	500	560
	4	1,100	1,230
Minor Collector	2	400	450
Secondary Arterials	2	700	780
	4	1,500	1,680
Major Arterials	2	900	1,010
	4	2,000	2,240
Divided Expressway	4	2,400	2,700
Freeway	4	3,000	3,240
	6	4,500	4,860

Source: Sonoma County

EXISTING TRAFFIC CONDITIONS

Traffic counts were conducted from 7:00 to 9:00 a.m. and from 3:30 to 5:30 p.m. on Tuesday, May 15, 2007, at each of the analysis intersections noted above; these hours correspond to the a.m. and p.m. peak traffic hours, respectively. Figure 3.6-2 shows the existing a.m. and p.m. peak-hour traffic volumes at the analysis intersections. Existing a.m. and p.m. peak-hour levels of service at each of the analysis locations is shown in Table 3.6-3. The existing levels of service during the a.m. and p.m. peak hours range from LOS A to LOS B at all intersections.

Table 3.6-3
Existing a.m. and p.m. Peak-Hour LOS at Proposed Project Intersections

Intersection #	Location	Peak Hour LOS Level (average delay in seconds)	
		a.m.	p.m.
1	U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.8)	B (11.4)
2	U.S. 101 northbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.6)	B (11.4)
3	U.S. 101 southbound off-ramp at Lytton Springs Road	B (10.5)	B (12.7)
4	U.S. 101 northbound off-ramp at Lytton Springs Road	A (9.7)	B (10.3)
5	Healdsburg Avenue at Lytton Springs Road (access to Route 2)	B (10.7)	B (10.8)
6	U.S. 101 southbound off-ramp at Geyserville Avenue	B (10.3)	B (10.4)
7	U.S. 101 northbound off-ramp at Geyserville Avenue (access to Route 3)	A (9.1)	A (9.2)
8	Geyserville Avenue at Banti Lane (access to Route 4)	A (10)	B (10.1)
9	Geyserville Avenue at Hamilton Lane (access to Route 5)	A (9.8)	B (10.2)
10	U.S. 101 southbound off-ramp at Canyon Road	A (9.7)	A (9.8)
11	U.S. 101 northbound off-ramp at Canyon Road	A (9.5)	A (9.6)
12	Geyserville Avenue at Canyon Road	A (7.4)	A (7.7)

Note: Numbers in parentheses indicate seconds of average delay overall at all-way stop controlled intersections and for the worst affected approach at side street controlled intersections

To evaluate the LOS on the roadway system, peak-hour traffic volumes are compared to maximum threshold volumes to indicate level of service (LOS). Table 3.6-4a presents the results of state highway segment LOS analysis and relates cumulative freeway volumes to County General Plan LOS thresholds. The level of service thresholds are established by Table CT-2 of the 1989 Sonoma County General Plan. No thresholds are specified for LOS A or LOS B explicitly and therefore a single classification of LOS C or better is used for LOS A, LOS B, and LOS C, cumulatively.

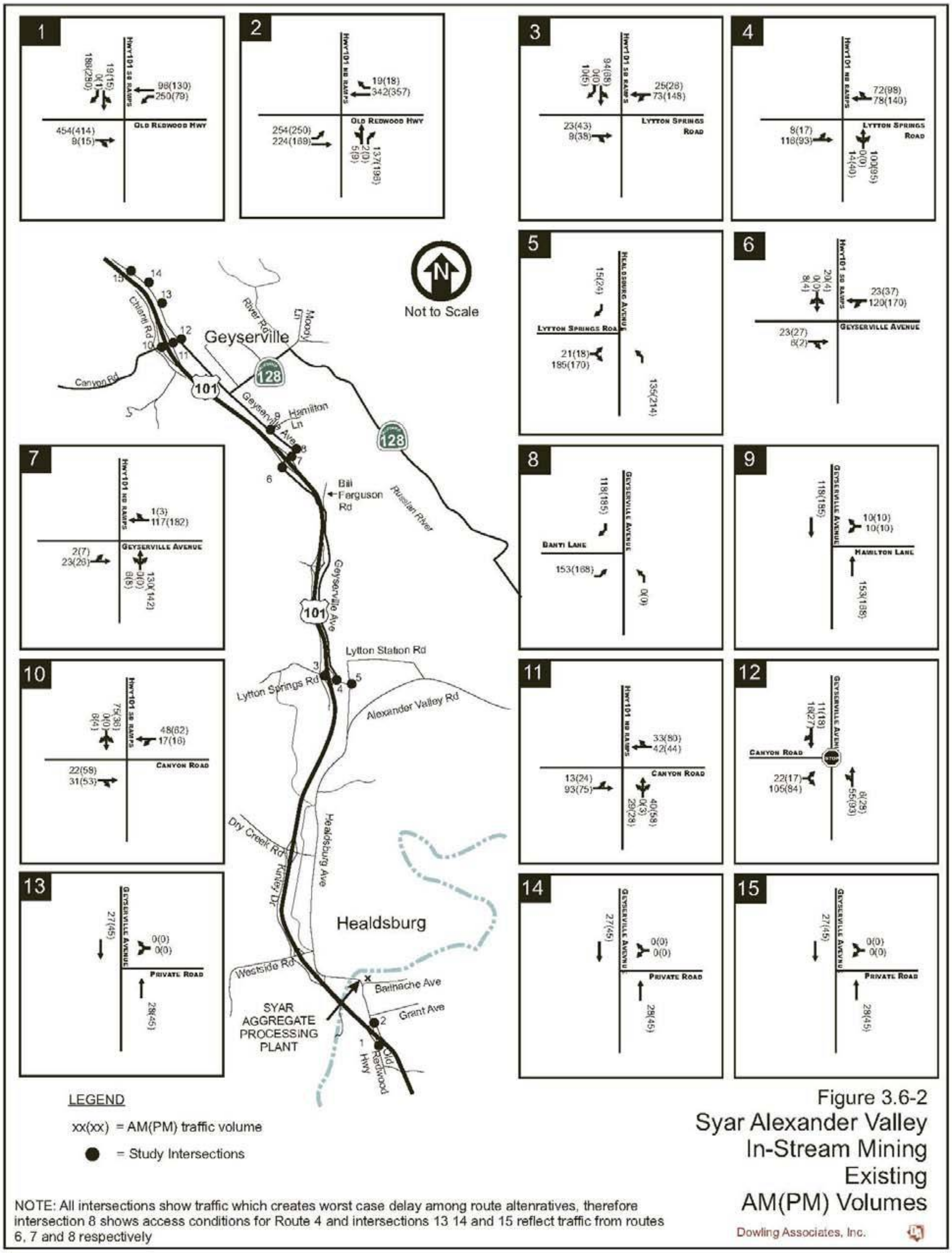

Figure 3.6-2
Syar Alexander Valley In-Stream Mining Existing AM(PM) Volumes

Table 3.6-4b presents the results of LOS analysis on County roads. The thresholds for county road LOS are established in Table CT-2 of the 1989 Sonoma County General Plan. Thresholds for County roads are not specified for LOS A or B and like state highway segment LOS analysis, a LOS C or better is used for LOS A, LOS B, and LOS C, cumulatively.

The highest traffic volumes near the site occur on U.S. 101 between Healdsburg and Geyserville. Traffic count data was extracted from the California Department of Transportation (Caltrans) Traffic and Vehicle Data System (Caltrans 2007). The peak hour is not indicated by Caltrans but is assumed to represent p.m. conditions, because p.m. conditions are higher than a.m. traffic volumes for locations observed both north and south of the segments included in the study.

Table 3.6-4a
Existing State Highway Segment Levels of Service

	Facility Class	LOS C Maximum Threshold Volume	LOS D Maximum Threshold Volume	Max. 1-way Peak Hour Volume	LOS
U.S. 101 North of Geyserville Avenue	4-Lane Freeway	3000	3240	1080	C*
U.S. 101 North of Lytton Springs Road	4-Lane Freeway	3000	3240	1320	C*
U.S. 101 North of Healdsburg Avenue	4-Lane Freeway	3000	3240	1830	C*

Notes: LOS = level of service; C* = LOS at C or better
Source: California Department of Transportation, Traffic and Vehicle Data System (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.

Table 3.6-4b
Existing County Road Segment Levels of Service

	Facility Class	LOS C Maximum Threshold Volume	LOS D Maximum Threshold Volume	Max. 1-way Peak Hour Volume	LOS
Geyserville Avenue East of U.S. 101	2-Lane Rural Road	1000	1200	185 (NB PM)	C*
Healdsburg Avenue North of U.S. 101	2-Lane Primary Arterial	900	1010	446 (SB PM)	C*
Lytton Springs Road East of U.S. 101	2-Lane Rural Road	1000	1200	238 (WB PM)	C*
Canyon Road East of U.S. 101	2-Lane Rural Arterial	1000	1200	125 (EB AM)	C*

Notes: LOS = level of service; C* = LOS at C or better
Source: California Department of Transportation, Traffic and Vehicle Data System (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.

All segments operate at acceptable peak-hour LOS between the south end of Healdsburg near the Syar Aggregate Plant and the Canyon Road interchange to the north.

HISTORICAL COLLISION DATA

Caltrans and the California Highway Patrol provided historical accident traffic data for the period from 2002 through June 1, 2007 for U.S. 101 and the most significant surface roads used for each of the haul rotes. The total accidents each year are presented in Table 3.6-5 along with the peak 3-year accident rate. Annual totals are provided for the number of accidents, number of fatal accidents, and number of injuries.

Three year peak accident rates are determined by estimating the annual traffic over the segments of these roads in the study area and comparing this to the incidence of accidents over consecutive 3-year periods. Based on Caltrans Collision Data on California State Highways (Caltrans 2005) freeway class facilities can be expected to have accident rates over 1 per million vehicle miles, rural collectors are expected to have rates over 3 per million vehicle miles and conventional two lane urban roads are expected to have rates around 5 per million vehicle miles. The segment of Healdsburg Avenue from U.S. 101 to the processing plant is treated as an urban road as this is a significant gateway to the City of Healdsburg.

B. Regulatory Framework

Caltrans has jurisdiction over U.S. 101 and SR 128, including all freeway interchanges. Roadways within the city limits of Healdsburg are controlled by the City of Healdsburg. Within the unincorporated County areas, including the community of Geyserville, roadways are within County jurisdiction.

C. Potential Impacts and Mitigation Measures

CEQA CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would typically have a significant impact if it would:

- cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or congestion at intersections);
- exceed, either individually or cumulatively, a LOS standard established by the County congestion management agency or the County for designated roads or highways;
- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- increase substantially hazards because of a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies, plans, or programs supporting alternative transportation.

Table 3.6-5
Historical Accident Data for Select Project Roadways

Roadway and Year	Number of Collisions	Number of Fatal Collisions	Number of Injuries
U.S. 101 – Old Redwood Highway to Canyon Road (Peak 3-year Accident Rate = 0.68 per Million Vehicle Miles)			
2002	29	0	18
2003	33	0	28
2004	42	2	44
2005	41	4	22
2006	21	0	19
2007*	1	1	1
Healdsburg Avenue – Bailhache Road to U.S 101 (Peak 3-year Accident Rate = 4.58 per MVM)			
2002	8	0	3
2003	6	0	1
2004	8	0	1
2005	4	0	0
2006	4	0	1
2007*	2	0	4
State Route 128 – Geyserville Avenue to Russian River (Peak 3-year Accident Rate = 1.77 per MVM)			
2002	3	0	3
2003	7	0	5
2004	3	0	4
2005	2	0	3
2006	4	0	2
2007*	0	0	0
Lytton Station Road – Geyserville Avenue to Alexander Valley Road (Peak 3-year Accident Rate = 1.13 per MVM)			
2002	3	0	2
2003	5	0	4
2004	4	0	5
2005	2	0	0
2006	3	0	1
2007*	1	0	1
Canyon Road – Graymont Drive to Geyserville Avenue (Peak 3-year Accident Rate =2.23 per MVM)			
2002	3	0	1
2003	3	0	2
2004	1	0	0
2005	2	0	1
2006	0	0	0
2007*	0	0	0

SOURCE: California Highway Patrol 2007
* = partial year data to June, 1 2007

COUNTY GENERAL PLAN GOALS OBJECTIVES

The 1989 Sonoma County General Plan and the Sonoma County Traffic Study Guidelines (PRMD, n.d.) establish specific significance criteria used to determine the transportation impacts. Caltrans significance criteria are referenced in the county Guidelines.

Goal CT-2: Provide and maintain a highway system capacity to serve projected highway travel demand in 2005 at acceptable levels of service.

The Sonoma County General Plan contains several objectives related to Goal CT-2 which concerns the County Highway System:

Objective CT-2.1: Reduce congestion on the countywide highway system by maintaining a "C" level of service or better on designated arterial and collector roadways unless a lower level of service is shown [in the general plan][2], a lower level of service is determined to be acceptable due to environmental or community values existing in some portions of the County, or the project(s) which would cause the lower level of service has an overriding public benefit which outweighs the increased congestion that would result.

Objective CT-2.2: Correlate new development with roadway improvements necessary to maintain the countywide levels of service set forth in Objective CT-2.1 or better on arterial and collector roadways as is more fully explained in policy CT-2b.

The Sonoma County General Plan contains several policies directly related to Goal CT-2.

Policy CT-2a: Use the levels of service shown [in the general plan][3] to determine whether or not congestion is exceeding the desired level of service on the countywide highway system. Use area and/or project traffic analyses to determine whether intersection impacts or other localized congestion may also affect these desired levels of service.

Policy CT-2b: Assure that new development occurs only when a funding mechanism is available for improvements needed to achieve these levels of service specified in CT-2a above. If the Board determines that a project will provide significant overriding public benefit, the project may be exempt from this requirement.

Policy CT-2c: General Plan tables[4] define levels of service “C” and “D” on a peak hour and average daily basis and should be used as a guideline for measurement of roadway congestion.

COUNTY TRAFFIC STUDY GUIDELINES

The County traffic study guidelines provide specific impact criteria for traffic impacts relating to twelve types of conditions:

County traffic study guidelines are consistent with County General Plan guidelines and are treated as an elaboration of the latter. State Highway standards of significance are consistent with Caltrans guidelines and apply only to state highways.

[2] 1989 Sonoma General Plan, Figures CT-2c and CT-2d on pages 289 - 291.

[3] Ibid.

[4] Tables CT-1 and CT-2 on pages 298 and 299. Table CT-2 for peak hours is reproduced as Table 3.6-2 in this report

The County traffic study guidelines indicate that a project would result in a significant impact if it failed to meet minimum standards for any of the following areas of analysis.

- **On-site & Frontage Improvements -** Proposed on-site circulation and street frontage would not meet the County's minimum standards for roadway or driveway design, or potentially result in safety hazards, as determined by the County in consultation with a registered traffic engineer.

- **Parking -** Proposed on-site parking supply would not be adequate to accommodate parking demand.

- **Emergency Access -** The project site would have inadequate emergency access.

- **Alternative Transportation -** The project provides inadequate facilities for alternative transportation modes (e.g., bus turnouts, bicycle racks, pedestrian pathways) and/or the project creates potential conflicts with adopted policies, plans, or programs supporting alternative transportation.

- **Road Hazards -** Hazards are increased due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment, heavy pedestrian or truck traffic).

- **Vehicle Queues -** The addition of project traffic causes the 95th percentile queue length to exceed roadway turn lane storage capacity [1].

- **Signal Warrants -** The addition of the project's vehicle or pedestrian traffic causes an intersection to meet or exceed Caltrans signal warrant criteria.

- **Turn Lanes -** The addition of project traffic causes an intersection to meet or exceed criteria for provision of a right or left turn lane on an intersection approach 2.

- **Sight Lines -** The project constructs an unsignalized intersection (including driveways) or adds traffic to an existing unsignalized intersection approach that does not have adequate sight lines based upon Caltrans criteria for state highway intersections and County criteria for County roadway intersections.

- **County Intersections -** The County Level of Service standard for intersections is Level of Service D or better. The project would have a significant traffic impact is the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate below the standard (LOS E or F).

  If the intersection currently operates or is projected to operate below the County standard (at LOS E or F), the project's impact is significant and cumulatively considerable if it causes the delay[5] to increase by five seconds or more. The delay will be determined by comparing intersection operations with and without the project's traffic for both the existing baseline and project future conditions

[5] Average delay shall be used as defined in the year 2000 Highway Capacity Manual for the signalized and all-way stop intersections and delay for any approach or turning movement shall be used for side street stop sign controlled intersections.

The above criteria apply to all signalized, all-way stop controlled, and side street controlled intersections with project traffic volumes over 30 vehicles per hour per approach or per exclusive left turn movement.

- **County Roadways -** The traffic added by the project would cause the segment to operate below 1) LOS C or 2) a specific threshold identified explicitly for a given road in the Sonoma County General Plan.

- **State Highways -** Level of service criteria for state facilities are provided by the Caltrans publication “Guide for the Preparation of Traffic Impact Studies”, as interpreted in the County traffic study guidelines. This states that Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D and that if the existing condition is below LOS C, then the existing average travel speed should be maintained.

PROJECT IMPACTS

Findings in the ARM Plan PEIR

The ARM Plan PEIR disclosed, analyzed, and mitigated potential traffic-related impacts in Sections 8.9, “Traffic and Circulation,” and 8.14, “Public Services and Utilities.” Section 8.9 explained that with mitigation, additional instream mining operations would result in traffic levels on public roadways that would be less than significant, and similar to levels that existed in 1994. The PEIR also noted that the ARM Plan required participation in the Aggregate Road Mitigation Fund to help maintain and improve public roadways and reduce potentially significant cumulative operational and safety impacts to less-than-significant. Section 8.14 similarly identified potentially significant impacts associated with the degradation of roadways, but referenced ARM Plan provisions and required additional mitigation measures that would reduce all such impacts to less-than-significant.

Project Impacts Not Discussed Further

The following section describes possible project generated traffic and circulation impacts that were considered, but are not expected to occur.

The project would not result in a change in air traffic patterns. The project proposes mining activities along the Russian River and does not propose construction of any structures that would be located within a flight zone. Additionally, no air transportation facilities are located within the study area and the project would have no discernable impact on air travel. The Healdsburg Municipal Airport is the closest air transportation facility to the project study site and is located approximately 3 miles southwest of the project study area. Neither this facility nor its operation would be impacted by the project activities. As no impact would occur, no further discussion is needed.

The Sonoma County Transit Route 60 bus line provides service between Healdsburg and Cloverdale. The route runs along portions of Healdsburg Avenue and Lytton Station Road between Healdsburg and Lytton Springs Road, along Fredson Road from Lytton Springs Road to Independence Lane along Geyserville Road from Lytton Springs Road past Canyon Road to Cloverdale. As of 2010 the route provides express service on 20 minute to 1 hour headways during the peak hour. Given the low volume of bus traffic the project would not result in impacts to bus traffic operations. Transit service along railways is addressed under impacts to rail circulation.

The project would not result in inadequate emergency access because any existing roadways serving the various instream mining sites would not be closed or obstructed. Further, none of the public roadway intersections would be blocked during the hauling periods.

The project does not involve on-site circulation or street frontage that do not meet minimum standards for roadway or drainage design. Based on the locations of the gravel bars there are no relevant issues related to project frontages.

The project would not result in inadequate parking capacity. Five full-time workers would be onsite daily during the mining operation season. These workers would park their vehicles on the terrace above the gravel bars or at the previously described staging area. Similarly, unused extraction and loading equipment would also be staged on the terraces or at the staging area. No vehicle parking would occur outside of the equipment parking and storage areas.

The project would not trigger the need for intersection geometric design improvements. The existing roadways are predominantly single lane with no turning lanes or signals. The volumes along the subject roads and the incremental truck traffic would not trigger signal warrants. Given the dispersion of project traffic, the effects on queuing and turning-lane requirements would be negligible resulting in no impacts[6].

The project would not create impacts related to access to the processing plant. Project traffic would access the plant by making a left turn west off of Healdsburg Avenue, via a left-turn pocket located 530 feet south of the intersection with Bailhache Avenue. Trucks would then travel north under Healdsburg Avenue (west of the intersection with Bailhache Avenue) to access the main plant. The relevant section of Healdsburg Avenue is suitable for truck traffic and currently provides access to large industrial, distribution and warehousing activities. The project's incremental truck traffic would not result in any significant impacts to the existing traffic mix. In addition, the presence of the left turn pocket would avoid the potential for delays on Healdsburg Avenue or other impacts.

Project Impacts

The following section describes the project’s traffic-generated impacts.

Impact 3.6-1 The project would substantially increase traffic in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or congestion at intersections).

Project Trip Generation Assumptions

The following procedures and assumptions were used to calculate the weekday truck and employee traffic associated with a peak mining production maximum of 350,000 tons per year.

Peak Truck Trips between Aggregate Mining Sites and the Syar Aggregate Processing Plant

As described in Chapter 1, “Introduction and Project Description,” mining operations would occur between June 1 and November 1 each year, and extend over a maximum period from 6 a.m. to 9:30 p.m. Truck operations would vary during the course of the year and trucks could only travel from 30 minutes after sunrise to 30 minutes before sunset. With allowances for

[6] Intersection level of service impacts identified at the SB 101 off ramp at Old Redwood Highway would not result in significant queuing because off-ramp storage exceeds 1000 feet and 95th percentile queuing would be less than 600 feet assuming 25 feet per passenger car and 60 feet per truck during the most congested peak of traffic.

meals, refueling and a shift change each day, there would effectively be a maximum of 12 hours of traffic generation.

The round-trip travel time between the sites and Syar plant in Healdsburg is about 1 hour. Travel times may vary slightly depending on the bars mined and the routes taken to and from the processing plant from year to year, however, one hour is an reasonable and conservative number for this analysis.

No more than 20 trucks per hour can access the site, load with gravel, and depart the site for the plant. As such, 20 vehicles could access the roadways and intersections leading to the site and 20 vehicles could access the roadways and intersections leading to the plant per hour. Given that the hauling operation could last for a maximum of 12 hours per day, a total of 480 daily one-way trips could occur (40 peak hour one-way trips times 12 hours of operation per day) which is the equivalent of 240 daily round trips. This estimate of 480 one-way trips is based on a peak truck loading scenario of trucks accessing the site, being fully loaded, and exiting in just 3 minutes each. This scenario is a conservative worst-case approach that overstates likely truck trips and their resulting impacts.

<u>Site Staff Trip Generation</u>

A total of five employees would be needed to operate the mining equipment. They would access the site in the morning, eat lunch at the site, and leave after their shift at the end of the day. One of these employees, the operations foreman, would supervise daily operations. The operations foreman is assumed to make two trips to the gravel site each day, once in the morning and once in the afternoon. In addition, one inbound and one outbound trip each could occur due to the lube truck and maintenance vehicle. If both vehicles plus the foreman access and leave the site within the same hour, a total of 3 inbound and 3 outbound trips could occur. It is conservative to assume that staff arrivals and departures occur within the same hour that hauling occurs; therefore the peak hour would include staff and haul truck trips.

<u>Total Trip Generation</u>

Based on the above assumptions, the project is estimated to generate 502 daily trips (480 trucks plus 22 staff and maintenance trips) on the surrounding street system. This means that during both the a.m. and p.m. peak hours, up to 51 one-way trips could occur along the route between any gravel bar site and the Syar plant. Table 3.6-6 summarizes these assumptions.

Although this study assumes an a.m. peak period from 7:00 to 9:00 a.m. and a p.m. peak period is from 3:30 p.m. to 5:30 p.m., the actual peak hour varies at each intersection based on the observations of traffic counts. It is conservative to assume that at each of the study intersections the peak condition is represented by the overlap of peak project generated traffic and the peak hour background traffic, regardless of precisely when the peak hour of background traffic occurs during the a.m. and p.m. commute periods.

As part of the level of service calculations, a passenger car equivalent (PCE) factor of 3.0 was applied to haul truck trips, lube truck and maintenance truck trips. The lube truck and maintenance truck will be light trucks so a factor of 3.0 is conservative. The resulting passenger car equivalent of the project trip generation is 1,478 one-way daily PCE-trips including 139 one-way peak hour PCE-trips[7].

[7] Hereafter the term 'trip' implies 'PCE-trip.'

Figure 3.6-3 shows project-only turning movements for each intersection with turns shown only for the route resulting in the highest delay at each location. The turning movement data presented in this figure does not necessarily occur during each mining season for any given intersection, but are dependent upon which bars are mined in any given season.

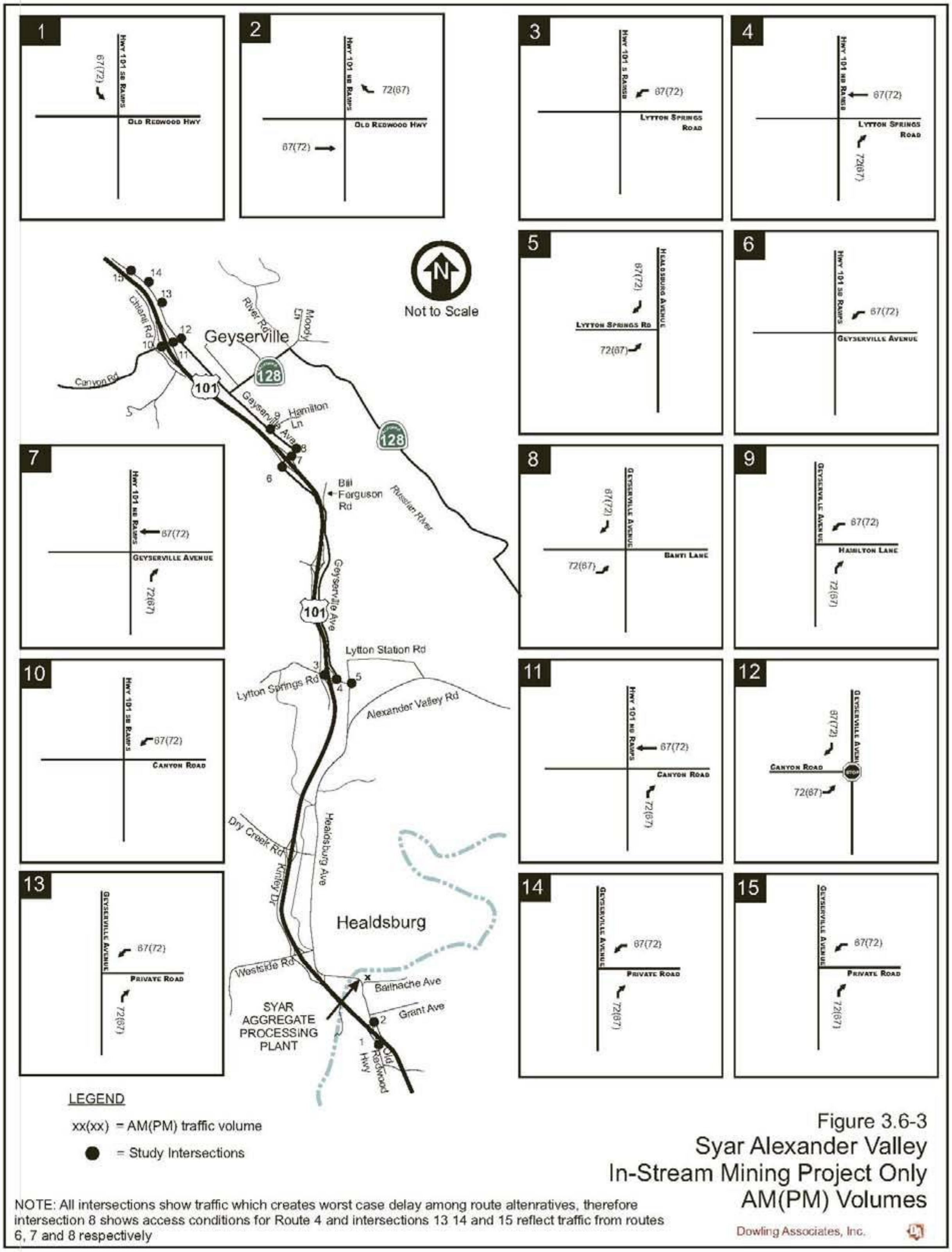

Figure 3.6-3
Syar Alexander Valley
In-Stream Mining Project Only
AM(PM) Volumes

Table 3.6-6
Project Trip Generation Assumptions in Trips and Passenger Car Equivalent Trips

Activity	Daily	a.m. peak hour			p.m. peak hour		
Trips							
	Total	In	Out	Total	In	Out	Total
Haul Truck	480	20	20	40	20	20	40
Site Staff	10	5	0	5	0	5	5
Supervisor	4	1	1	2	1	1	2
Maintenance Truck	4	1	1	2	1	1	2
Lube Truck	4	1	1	2	1	1	2
Total	502	28	23	51	23	28	51
Passenger Car Equivalents							
	Total	In	Out	Total	In	Out	Total
Haul Truck	1,440	60	60	120	60	60	120
Site Staff	10	5	0	5	0	5	5
Supervisor	4	1	1	2	1	1	2
Maintenance Truck	12	3	3	6	3	3	6
Lube Truck	12	3	3	6	3	3	6
Total	1,478	72	67	139	67	72	139

Note: Each truck = 3 passenger car equivalents based on County Guidelines.

The cumulative traffic represents 18 years of background traffic growth to the year 2025 at an annual rate of 1.5%. Figure 3.6-4 shows the Cumulative 2025 With Project turning movements for each intersection assuming utilization of the project gravel bar access route that generates the highest delay in each case.

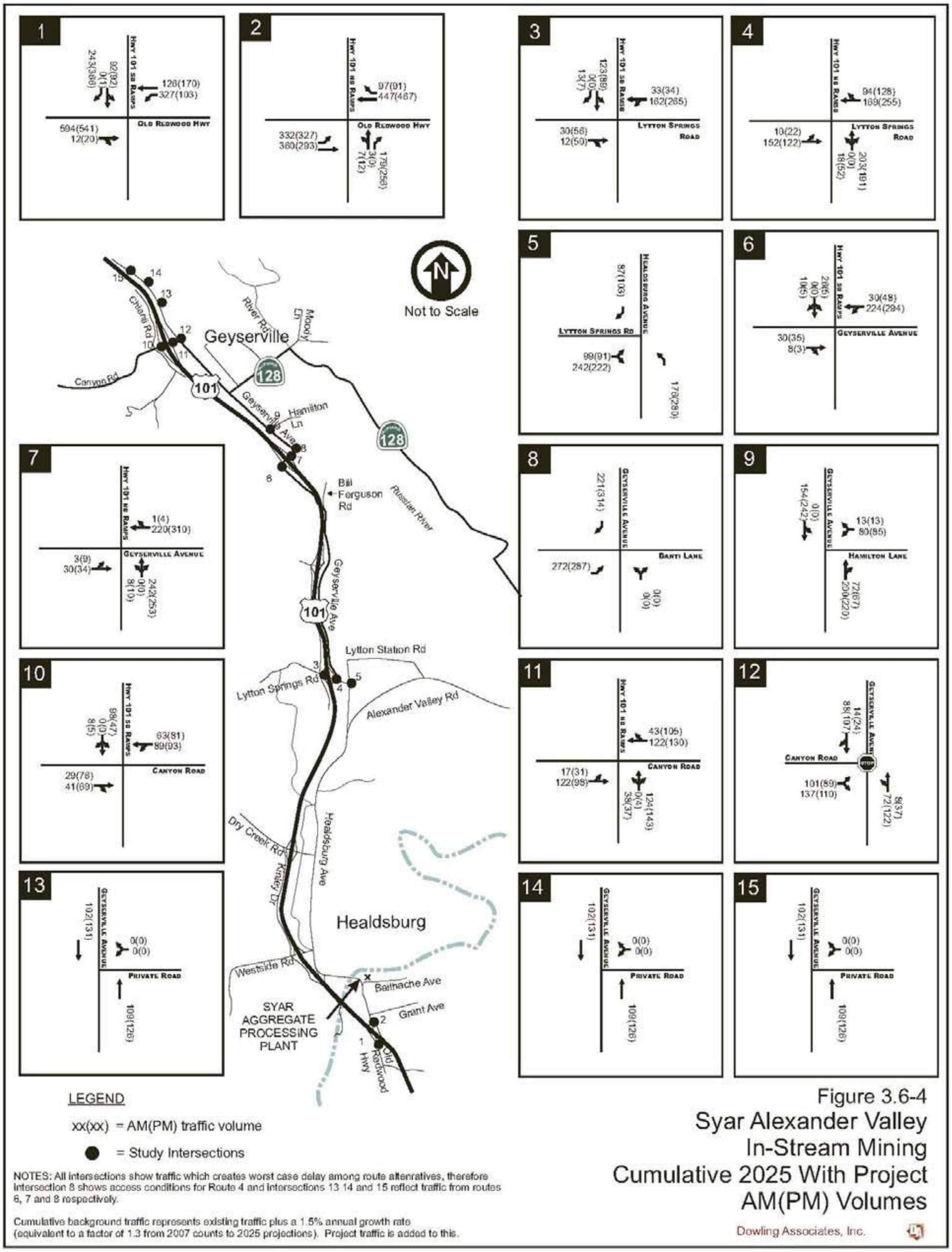

Figure 3.6-4
Syar Alexander Valley In-Stream Mining Cumulative 2025 With Project AM(PM) Volumes

REP Trip Generation and Traffic Impacts

Based on anticipated improvements, and the amount of material involved, periodic activity related to the REP improvements will generate a maximum of 60 vehicles trips per season and a maximum of 10 vehicle trips per day. REP hauling would occur during periods when crews and equipment would not be engaged in aggregate mining activity. Therefore, these periods would coincide with a reduction in aggregate mining related trip generation that is offset by an equal number of trips generated while moving this equipment and material to and from REP improvement sites.

The maximum daily REP trip generation of 10 trips per day would equate to a total of 30 passenger car equivalent (PCE) trips per day. This low volume falls far below the County's 30-car per hour minimum threshold for considering intersection or roadway traffic impacts.

Access by vehicles other than haul trucks (e.g., re-vegetation crews) would also be required, but would not add significantly to existing road traffic because the REP activities would occur over short time periods and generate negligible traffic volumes with an average volume of less than one trip per hour.

Peak Hour Intersection Level of Service

Table 3.6-7 shows the modeled a.m. and p.m. peak-hour LOS at study intersections resulting from the project using the proposed haul routes. As described above, a significant impact would occur if the project lowers and intersection to LOS E. Because the model assumes a 1.5% annual growth rate, and a peak number of truck trips travelling though the study intersections during the peak hour, the modeling results are very conservative and overstate the impacts of project implementation. Nevertheless, as shown in Table 3.6-7, all intersections used by the project would experience LOS C or better conditions except the intersection of U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway, where the left turn movements would result in a LOS of F in 2025, which is considered a significant impact.

This impact would occur if the maximum amount of traffic – 20 haul trucks plus lube truck, maintenance truck, and supervisor – all left the site within the same peak hour and made the most congested movement (i.e., the southbound left turn from the ramp onto Old Redwood Highway). This left turn movement would result in delay because drivers must wait for a gap in all cross traffic, which includes separate northbound and southbound traffic on Old Redwood highway and a third lane of traffic turning from Old Redwood Highway onto the southbound U.S 101 on-ramp. As noted above, this impact is conservative and likely overstated in part because it incorporates a peak hour factor of 0.88, consistent with Caltrans Traffic Analysis guidelines. The peak hour factor accounts for the most congested 15 minutes of the peak hour, which is when capacity constraints can cause the breakdown in flow that affect the rest of the peak periods. According to the Highway Capacity Manual methodologies, delay at minor street turning movements is very sensitive when the demand for turns reaches or exceeds the available gaps. This means that very small changes in volume can have a large impact on delay.[8]

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[8] As explained in Note 6, the project would not result in spillover congestion because of length of the off-ramp. At the 95th percentile, queuing would require less than 600 feet of more than 1,000-foot ramp. The calculated queue is 11.4 vehicles rounded to 12 which would consist of 4 passenger cars requiring less than 25 feet of storage each and 8 haul trucks requiring less than 60 feet of storage each.

Table 3.6-8 shows that the intersection would not drop below LOS D until 2015, and, to maintain an LOS D or better. Syar would need to reduce the number of truck trips at this intersection during the am peak hour by one trip per year from 2015 to 2025 (or the expiration of the Use Permit).

Impacts due to REP traffic would only occur where REP generated trips result in unacceptable conditions along routes not addressed by the impact analysis of mining routes given normal aggregate mining activity. Analysis of the trip generation assumptions indicates that there are no such impacts.

Mitigation Measures

3.6-1 **Restrict Peak Hour Traffic**. Syar shall prohibit project trucks from traveling through the Hwy 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway during the AM peak from 7:00-9:00 AM in accordance with Table 3.6-8. Syar shall monitor and document compliance with this measure, and submit monthly reports during the mining season to PRMD demonstrating compliance.

Alternatively, in 2015 or thereafter, Syar may submit to PRMD a traffic study with updated traffic counts at the southbound off-ramp of Hwy 101 and Healdsburg Avenue/Old Redwood Highway. If the study finds that traffic has not grown as quickly as predicted above, and that the intersection has and will operate at LOS D or better during the am peak of 7:00-9:00 AM with more Syar trucks than authorized above, then Syar shall comply with all limits identified in the traffic study to maintain LOS D or better. At no time may Syar exceed 22 truck trips per hour (20 gravel trucks and 2 miscellaneous vehicles).

Significance after Mitigation

Implementation of Mitigation Measure 3.6-1 would result in no worse than LOS D (with off ramp left turning delay of approximately 34.5 seconds in each case), a less-than-significant impact.

Impact 3.6-2 The project would not exceed the Roadway LOS standard for designated roads or highways.

Table 3.6-9a analyzes state highway roadway volumes with implementation of the project, against the relevant County General Plan LOS thresholds. The project traffic includes the passenger car equivalent factor of 3.0 for each truck from project operations. Table 3.6-9b relates cumulative freeway volumes to County General Plan LOS thresholds for county roads.

Table 3.6-7
Peak Hour Level of Service at Existing Condition, Cumulative 2025 No Project and Cumulative 2025 With Project Impacts along Haul Routes 2 – 8

#	Intersection Location	Peak Hour LOS Level (average delay in seconds) at Intersections																	
		Existing Condition		Cumulative 2025 No Project		Cumulative 2025 Haul Route 2		Cumulative 2025 Haul Route 3		Cumulative 2025 Haul Route 4		Cumulative 2025 Haul Route 5		Cumulative 2025 Haul Route 6		Cumulative 2025 Haul Route 7		Cumulative 2025 Haul Route 8	
		A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
1	U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.8)	B (11.4)	C (15.9)	B (13.7)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)
2	U.S. 101 northbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.6)	B (11.4)	B (14.3)	B (13.8)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)
3	U.S. 101 southbound off-ramp at Lytton Springs Road	B (10.5)	B (12.7)	B (11.6)	C (15.6)	B (14)	C (20.7)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)
4	U.S. 101 northbound off-ramp at Lytton Springs Road	A (9.7)	B (10.3)	B (10.4)	B (11.4)	B (11.1)	B (12.3)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)
5	Healdsburg Avenue at Lytton Springs Road (access to Route 2)	B (10.7)	B (10.8)	B (11.7)	B (12)	B (14.6)	C (17.5)												
6	U.S. 101 southbound off-ramp at Geyserville Avenue	B (10.3)	B (10.4)	B (11.3)	B (11.4)					B (12.9)	B (13)	B (12.9)	B (13)	B (14.4)	C (18.6)	B (14.4)	C (18.6)	B (14.4)	C (18.6)
7	U.S. 101 northbound off-ramp at Geyserville Avenue (access to Route 3)	A (9.1)	A (9.2)	A (9.4)	A (9.6)					A (9.8)	B (10.1)	A (9.8)	B (10.1)	B (10.8)	B (11.5)	B (10.8)	B (11.5)	B (10.8)	B (11.5)
8	Geyserville Avenue at Banti Lane (access to Route 4)	A (10.0)	B (10.1)	B (10.3)	B (10.5)					B (11.9)	B (12.3)	B (11.1)	B (11.3)						
9	Geyserville Avenue at Hamilton Lane (access to Route 5)	A (9.8)	B (10.2)	B (10.4)	B (11)							B (12.3)	B (13.9)						
10	U.S. 101 southbound off-ramp at Canyon Road	A (9.7)	A (9.8)	B (10.2)	B (10.3)									B (11.8)	B (12)	B (11.8)	B (12)	B (11.8)	B (12)
11	U.S. 101 northbound off-ramp at Canyon Road	A (9.5)	A (9.6)	A (10)	B (10.2)									B (10.5)	B (10.7)	B (10.5)	B (10.7)	B (10.5)	B (10.7)
12	Geyserville Avenue at Canyon Road	A (7.4)	A (7.7)	A (7.7)	A (8.1)									A (8.5)	A (8.8)	A (8.5)	A (8.8)	A (8.5)	A (8.8)
13	Geyserville Avenue at access to Route 6																	A (9.5)	A (9.9)
14	Geyserville Avenue at access to Route 7															A (9.5)	A (9.9)		
15	Geyserville Avenue at access to Route 8													A (9.5)	A (9.9)				

Note: Numbers in parentheses indicate seconds of average delay overall at all-way stop controlled intersections and for the worst affected approach at side street controlled intersections
Shaded cells indicate no change from no project condition
N/A = The proposed intersections do not currently exist at this time. They would be connected to public roadways for the purposes of the project.

Table 3.6-8
Maximum Number of AM Trucks Trips from Site to Plant to Avoid Impact

Year	Traffic Growth above 2007 Counts	Maximum Truck Trips (including maintenance & lube trucks)	Reduction from Total
2008	1.5%	22	0
2009	3.0%	22	0
2010	4.6%	22	0
2011	6.1%	22	0
2012	7.7%	22	0
2013	9.3%	22	0
2014	11.0%	22	0
2015	12.6%	21	1
2016	14.3%	20	2
2017	16.1%	19	3
2018	17.8%	18	4
2019	19.6%	17	5
2020	21.4%	16	6
2021	23.2%	15	7
2022	25.0%	14	8
2023	26.9%	13	9
2024	28.8%	12	10
2025	30.7%	11	11

Table 3.6-9a
State Highway Segment Levels of Service

Segment	Facility Class	LOS C Threshold Volume	LOS D Threshold Volume	**Existing**		**Cumulative 2025 No Project**		**Cumulative 2025 With Project**	
				Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS
US 101 North of Geyserville Avenue	4-Lane Freeway	3000	3240	1080	C*	1415	C*	1490	C*
US 101 North of Lytton Springs Road	4-Lane Freeway	3000	3240	1320	C*	1729	C*	1804	C*
US 101 North of Healdsburg Avenue	4-Lane Freeway	3000	3240	1830	C*	2397	C*	2472	C*

Source: California Department of Transportation, Traffic and Vehicle Data System (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.

Notes: LOS = level of service; C* = LOS at C or better

Table 3.6-9b
County Road Segment Levels of Service

Segment	Facility Class	LOS C Threshold Volume	LOS D Threshold Volume	Existing		Cumulative 2025 No Project		Cumulative 2025 With Project	
				Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS
Geyserville Avenue East of U.S. 101	2-Lane Rural Road	1000	1200	185 (NB PM)	C*	242 (NB PM)	C*	317 (NB PM)	C*
Healdsburg Avenue North of U.S. 101	2-Lane Primary Arterial	900	1010	446 (SB PM)	C*	584 (SB PM)	C*	659 (SB PM)	C*
Lytton Springs Road East of U.S. 101	2-Lane Rural Road	1000	1200	238 (WB PM)	C*	312 (WB PM)	C*	387 (WB PM)	C*
Canyon Road East of U.S. 101	2-Lane Rural Arterial	1000	1200	125 (EB AM)	C*	164 (EB AM)	C*	239 (EB AM)	C*

Source: California Department of Transportation, Traffic and Vehicle Data System (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.

Notes: LOS = level of service; C* = LOS at C or better

As shown in Tables 3.6-9a and 3.6-9b, the project would not result in traffic exceeding the relevant threshold for highway level of service. As a result, the project would result in a less-than-significant impact.

Traffic Safety

Impact 3.6-3 The project would substantially increase hazards due to a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

<u>General Access Conditions</u>

The use of large haul trucks on public roads could reduce safety along roadways and at intersections where sight distances and other physical design features do not conform to local and regional agency design standards. Truck traffic from the project must access public roadways on many of the proposed routes. A field evaluation of all of the access points was conducted during June 2007 by John Dowden (Dowling Associates, Inc.).

The quality of access at those locations where trucks enter public roadways from private roads, coupled with the larger turning radii and slower movement of trucks, could create conflicts with other drivers and bicyclists using the roadways.

Mitigation Measures

3.6-3a **Develop a Traffic Control Plan**. Syar shall retain a professional engineer to develop a traffic control plan for each haul route. The plan at minimum shall include the provision of warning signs and other informational devices to alert other drivers of the presence of trucks entering the major roadways; plans for any usage of traffic lane changes; and locations for any required personnel such as flagmen or personal directing traffic.

3.6-3b **Educate Truck Drivers.** As per ARM Plan standards, Syar shall develop a truck driver education program that includes posting details on haul routes and informing drivers of procedures established to reduce public conflicts. Syar shall monitor driver compliance and respond to any complaints about gravel trucks operations.

<u>Curvature on Lytton Station Road</u>

The Lytton Station Road curve was identified by Carlenzoli and Associates (2008), and concurred with by the County, as not being able to safely accommodate the wider turning radius of haul trucks. The curve may need improvement to the radius in order to allow haul trucks to trucks to negotiate the curve without tracking into the opposing lane and creating conflicts with existing traffic.

Mitigation Measures

3.6-3c **Improve Curve on Lytton Station Road.** Prior to use of Haul Route 2, Syar shall purchase required right of way and design and construct a widening improvement of Lytton Station Road sufficient to meet applicable Caltrans and AASHTO standards and keep project haul trucks from crossing the center line. The Sonoma County Department of Transportation and Public Works has developed a preliminary concept for lane widening that would expand the paved area of the interior south east quadrant of the curve by approximately 10 feet at the apex. This preliminary concept appears to be the most efficient and cost-effective means of meeting this requirement, although widening to the outside of the curve could also meet this requirement. If right of way is required for the improvements and Syar is unable to acquire the necessary right-of-way to construct the improvements, the implementation of Mitigation Measure 3.6-3c may not be feasible. If the identified improvement in Mitigation Measure 3.6-3c is infeasible, the roadway impact would be significant and unavoidable.

<u>Sight Distance</u>

Carlenzoli and Associates (2008) obtained data and evaluated impacts in a report, entitled *Syar Industries Incorporated Alexander Valley In-Stream Mining Project.* The County reviewed the report and concurred with the findings, and included several additional recommendations developed by the Department of Transportation and Public Works.

Haul route 3 stop at Independence Lane at Geyserville Avenue: Sight distance for the stop at Independence Lane turning north on Geyserville Avenue is 260 feet, less than the minimum stopping sight distance of 300 feet, as a result of overhanging vegetation obstructing the view. This is a potentially significant impact.

Haul route 5 access from Hamilton Lane to Geyserville Avenue: Sight distance for the stop at Hamilton Lane turning south onto Geyserville Avenue is 300 feet, as a result of overhanging vegetation obstructing the view. The stopping sight distance of 300 feet is exactly equal to the minimum stopping sight distance. This may be a potentially significant impact.

Mitigation Measure

3.6-3d **Trim Vegetation to Increase Stopping Sight Distances.** Prior to using Geyserville Avenue as a haul route, Syar shall ensure that shrubs and other vegetation are trimmed in the County right of way to provide more than 300 feet of stopping sight distance along:

- Geyserville Avenue southeast of Hamilton Lane; and
- Geyserville Avenue north of Independence Lane.

Significance after Mitigation

Mitigation Measures 3.6-3a through 3.6-3d would reduce potential traffic-related hazards due to design features or incompatible use to less-than-significant levels.

Road Preparation and Wear

Impact 3.6-4. The project would increase wear and tear of existing private and public roadways used as haul routes for the project.

The use of large trucks to transport material to and from the study area to the processing plant would adversely affect road conditions on the designated haul routes by increasing the rate of road wear. The degree to which this impact would occur depends on the design (pavement type and thickness) and the existing condition of the road. Some existing streets may not be designed with a pavement thickness that would withstand substantial truck traffic volumes. In addition, the proposed number of truck trips per day (up to 480), for up to 5 months per year, is expected to contribute to wear and tear and damage to both public and private roads.

Syar retained a professional civil engineer to evaluate the condition of roads along the proposed haul routes (Carlenzoli and Associates 2008). Table 3.6-10 presents the road condition analysis as presented in that engineering report with some additions made by the County, which reviewed that report and concurred with the findings otherwise.

Table 3.6-10
Civil Engineering Review of Road Conditions

Road	Route(s)	Condition
Geyserville Avenue	6, 7 & 8	Generally in good condition with adequate shoulders.
Hamilton Lane	5	Generally in fair condition. No shoulders.
Geyserville Avenue	5	Generally in good condition. Adequate shoulders on south half, but shoulders should be widened on north half.
Banti Lane	5	Generally in good condition. Presently a locked gate at Geyserville Avenue.
Bill Ferguson Road	3	Generally in fair condition.
Geyserville Avenue	3	Generally in good condition. Adequate shoulders on north half, but shoulders should be widened on south half.
Healdsburg Avenue	2	Generally in fair condition except the portion within the railroad right-of-way is in very poor condition.
Lytton Station	2	Generally in fair condition except some patches which are primarily in the center 10 feet of the road.
Hassett Lane	2	Generally in poor condition with numerous patches. The existing bridge at the north end is 19 feet wide.

Source, Carlenzoli and Associates 2008.

Mitigation Measures

3.6-4a **Enter into a Roadway Maintenance Agreement with Sonoma County.** Prior to first mining season, Syar shall enter into a Roadway Maintenance Agreement with Sonoma County providing its proportionate share of the responsibility to maintain the proposed haul roads.

3.6-4b **Implement roadway preparation work.** Prior to use of a Haul Route that utilizes one of the following roads, Syar shall implement roadway preparation work and construct pavement improvements, as described below, prior to the use of relevant road.

- Bill Ferguson Road shall receive a new chip seal.
- Hassett Lane and Lytton Station Road shall receive a new asphalt overlay.
- Healdsburg Avenue shall receive a new chip seal on the portion adjacent to Lytton Station Road.
- Banti Lane shall receive a new chip seal.

- Prior to proposed roadwork on Lytton Station Road, Hassett Lane and, Healdsburg Avenue, Syar shall perform excavation and pavement repair at locations on the haul route portions of those roads specified by the County Department of Transportation and Public Works to address road base failure.

3.6-4c **Document road conditions and repair roads.** Syar shall document road conditions prior to and after the mining season and repair any damage caused by Syar each year.

Significance after Mitigation

Mitigation Measures 3.6-4a through 3.6-4c would reduce potential project traffic-related roadway damage impacts to less-than-significant levels.

Railway Safety

Impact 3.6-5 The project could result in damage to existing rail crossings, or result in conflicts between trucks and future rail traffic.

The California Public Utilities Commission (CPUC) requires that all at-grade crossings be subjected to on-site reviews in the course of permitting. These reviews establish the adequacy of crossing provisions, including warning devices consistent with the CPUC general orders and Caltrans standards. County staff, Syar representatives, and representatives of NCRA and CPUC met on-site on November 29, 2007 and inspected crossings on Routes 2, 3, 4, 5, 6 and 7. Route 8 was not proposed as part of the project at that time, but is similar to the other private crossings. NCRA and CPUC indicated during the site visit, and in correspondence with the County (NCRA 2007, CPUC 2007), that improvements will be required at all crossings. Improvements may include track work, track roadbed improvement, approach roadway improvements, and warning device upgrades commensurate with the level of rail service and volume of truck traffic being proposed. Syar would be required to enter into a lease agreement with the NCRA for private crossings that would include crossing improvements and maintenance requirements. Improvements to the public crossing on Lytton Station Road would require coordination with NCRA, CPUC and the County.

Mitigation Measures

3.6-5 **Improve Railroad Crossings.** Syar shall improve railroad track crossings at Lytton Springs Road (Route 2) and the private crossings on Routes 3, 4, 5, 6, 7, and 8 to meet all applicable safety standards as required by the CPUC and NCRA. For Routes 3, 4, 5, 6, 7, and 8, Syar shall obtain an encroachment permit and enter into a lease agreement with NRCA for installation of improvements. This encroachment permit would obligate Syar for ongoing maintenance of the railroad crossings. For Lytton Springs Road, Syar shall coordinate with the County, CPUC, and NCRA to repair the pavement.

Significance after Mitigation

Mitigation Measure 3.6-5 would reduce potential impacts of traffic induced damage to existing rail crossings and reduce potential impacts of conflicts between trucks and future rail traffic to less-than-significant levels.

Alternative Modes of Transportation

Impact 3.6-6 Mining of certain bars would add truck traffic to Geyserville Avenue, which is designated as a proposed bikeway, and is currently used by bicyclists. Portions of Geyserville Avenue do not meet current County roadway design standards and the addition of truck traffic could cause potential conflicts between project traffic and bicyclists and pedestrians.

Although there are no existing designated bicycle routes on any of the proposed haul routes, Geyserville Avenue has been proposed as a future Class II bicycle route. In addition, given the popularity of cycling in Sonoma County, it is assumed that bicyclists use Geyserville Avenue. The portions of Geyserville Avenue to be used as a haul route do not appear to have any significant pedestrian use. Some sections of Geyserville Avenue proposed as a haul route have adequate shoulder widths for a class II bikeway, while other sections do not. The addition of truck traffic on Geyserville Avenue could increase conflicts between project traffic and bicyclists and/or pedestrians. This potential for conflicts would be considered greatest where the haul route would be regularly used by bicyclists or pedestrians and is designated a proposed bikeway, and the road does not meet current County roadway design standards (including paved shoulders of sufficient width for use by bicycles).

Mitigation Measures

3.6-6a **Where necessary, widen all the portions of Geyserville Avenue used as a haul route for the project**. Syar shall widen all portions of Geyserville Avenue used as a haul route to five feet of paved shoulder. Syar shall provide a minimum of 3 feet of paved shoulder in areas with legal, physical and/or environmental constraints (e.g., lack of right of way, creek crossings, slopes, and trees).

3.6-6b **Educate Truck Drivers.** Syar shall provide information on proposed bike routes in any driver education or training associated with Mitigation Measure 3.6-3b.

Significance after Mitigation

Mitigation Measures 3.6-6a and 3.6-6b would reduce potential project-related hazards to bicyclists due to the project to a less-than-significant level.

Secondary Impacts Resulting from Implementing Transportation Mitigation Measures

Impact 3.6-7 Implementation of Mitigation Measures 3.6-3c, 3.6-3d, and 3.6-6a, could potentially result in secondary impacts in terms of loss of biological resources from vegetation pruning and/or tree removal.

Widening of the curve along Lytton Station Road for Mitigation Measure 3.6-3c may require tree pruning and/or removal; the widening of portions of Geyserville Road for Mitigation Measure 3.6-6a may require tree/vegetation pruning; and Mitigation Measure 3.6-3d will require vegetation pruning on Geyserville Avenue at two locations for sight distance, could result in potential biologic impacts. These potential impacts are addressed in Section 3.3, ‘Vegetation and Wildlife’.

Mitigation Measures

The mitigation measures in Section 3.3, "Vegetation and Wildlife", including measures 3.3-4, 3.3-6, 3.3-7, and 3.3-10b shall apply equally to the implementation of traffic mitigation measures.

Significance after Mitigation

Implementation of the above-identified mitigation measures would reduce all secondary impacts to a less-than-significant level.

3.7 AIR QUALITY

This section summarizes existing air quality conditions and applicable regulations, and analyzes potential temporary, short-term, and long-term air quality impacts of the proposed project. The method of analysis for operational, local mobile source, odor, and toxic air contaminant (TAC) emissions is consistent with the recommendations of the Northern Sonoma County Air Pollution Control District (NSCAPCD). In addition, mitigation measures are recommended, as necessary, to reduce significant air quality impacts to less-than-significant levels, where feasible.

A. Environmental Setting

The proposed study area is located in the northern portion of Sonoma County, which is within the North Coast Air Basin (NCAB). The NCAB also comprises all of Del Norte, Humboldt, Mendocino, and Trinity counties.

Ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the project vicinity are determined by such natural factors as topography and meteorology, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

TOPOGRAPHY AND METEOROLOGY

The study area is situated in an inland valley, drained by the Russian River, which runs southwest to the Pacific Ocean about 20 miles away. The study area is elevated approximately 200 to 400 feet above sea level and is separated from the ocean by the coast ranges.

Wet winters and dry summers characterize the region's inland Mediterranean-type climate. Climate is temperate, with an average annual high of 75°F, and an average low of 47°F. Rainfall totals can vary widely over a short distance, with windward mountain areas west of Healdsburg receiving over 60 inches of rain, while shadow areas, such as the city proper, receive about 40 inches annually. During stormy periods, horizontal and vertical air movement ensures rapid pollutant dispersal. Rain also washes out particulate and other pollutants. Conversely, during calm periods, pollutant levels can build up to potentially unhealthful levels.

Winds from March to November typically blow onshore, and then are drawn northward by surface low pressure in warmer inland areas. Daytime summer winds are often from the southwest. During winter months, drainage winds are more common, with colder air from surrounding mountains flowing down into the valley floor and then southwestward toward the Pacific along the Russian River drainage.

Normally, air temperatures decrease with increasing elevations. Sometimes this normal pattern is inverted, with warm air aloft, and cooler air trapped near the earth's surface. This atmospheric condition, called an inversion, occurs in all seasons. In summer, especially when wind speeds are very low, a strong inversion will trap air emissions near the surface, allowing high levels of ozone smog to develop. In winter, persistent inversions can trap emissions of particulate (e.g., wood smoke) near the surface, resulting in unhealthful air quality. The potential for summer air pollution in Sonoma County is moderate. Even though population is relatively low, because of high surface temperatures with plentiful sunshine, relatively stable air, and surrounding mountains that trap emissions, ozone smog can develop.

Local pollution sources are augmented by emissions transported from upwind sources (i.e., the San Francisco Bay Area). Conversely, air pollutant emissions created in the area can be transported toward other communities by the wind, and contribute to unhealthful levels in those areas. Hence, controlling air pollution requires both local and regional efforts and unified programs to achieve clean air.

EXISTING AIR QUALITY CONDITIONS-CRITERIA AIR POLLUTANTS

Concentrations of the following air pollutants: ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health, and because there is extensive documentation available on health-effects criteria for these pollutants, they are commonly referred to as "criteria air pollutants."

A brief description of each criteria air pollutant, including source types, health effects, and future trends, is provided below along with the most current attainment area designations and monitoring data for the study area.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_x) in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_x are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NO_x levels are present to sustain the ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional scale, ozone is considered a regional pollutant.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 1991).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 part per million (ppm) for one to two hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes (the amount of air inhaled and exhaled), and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in permeability of respiratory epithelia; such increased permeability leads to an increased response of the respiratory system to challenges, and a decrease in the immune system's ability to defend against infection. (Godish 1991).

Due to the implementation of stricter motor vehicle controls, ozone precursor emissions of ROG and NO_x have decreased since 1975 and are projected to continue declining through 2020. Stationary source emissions of ROG have declined over the last 20 years due to new controls for oil refinery fugitive emissions and new rules for control of ROG from various industrial coatings and solvent operations (ARB 2006).

Carbon Monoxide

Carbon monoxide is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. 77% of the nationwide CO emissions are from mobile sources. The other 23% consists of CO emissions from wood-burning stoves, incinerators, agricultural slash burning (in autumn), and industrial sources.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2007a).

The highest concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to problems caused by ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2007a). The combined emissions of NO and NO_2 are referred to as NO_x and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local NO_x emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions.

Sulfur Dioxide

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at five ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Respirable and Fine Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2007a). Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (ARB 2006).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons (PAH), and other toxic substances adsorbed onto fine particulate matter (referred to as the "piggybacking effect"), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2007a). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. Environmental Protection Agency (EPA) set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2007a).

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95% between 1980 and 1999), and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (EPA 2007a).

The decrease in lead emissions and ambient lead concentrations over the past 25 years is California's most dramatic success story with regard to air quality management. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent California Air Resources Board (ARB) regulations have virtually eliminated all lead from gasoline now sold in California. All areas of the state are currently designated as attainment for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB identified lead as a TAC.

Emissions Inventory

Table 3.7-1 summarizes emissions of criteria air pollutants within Sonoma County for various source categories. According to Sonoma County's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant levels of ROG, CO, NO_x, and SOx accounting for approximately 56%, 87%, 94%, and 93%, respectively, of the total emissions. Area-wide sources account for approximately 82% and 74% of the County's PM_{10} and $PM_{2.5}$ emissions.

Table 3.7-1
Summary of 2005 Estimated Emissions Inventory for Sonoma County

Source Type / Category	Estimated Annual Average Emissions (tons per day)					
	ROG	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Stationary Sources						
Fuel Combustion	0.23	4.58	1.11	0.07	0.63	0.43
Waste Disposal	0.14	0.00	0.00	0.00	0.00	--
Cleaning and Surface Coating	3.04	0.00	0.00	--	--	----
Petroleum Production and Marketing	1.16	--	--	--	--	--
Industrial Processes	0.97	0.08	0.01	0.03	1.28	0.62
Subtotal (Stationary Sources)	**5.55**	**4.65**	**1.12**	**0.11**	**1.91**	**1.05**
Area-Wide Sources						
Solvent Evaporation	5.80	--	--	--	--	--
Miscellaneous Processes	4.17	22.47	1.42	0.07	18.77	8.12
Subtotal (Area-wide Sources)	**9.97**	**22.47**	**1.42**	**0.07**	**18.77**	**8.12**
Mobile Sources						
On-road Motor Vehicles	14.43	136.13	25.00	0.20	0.75	0.52
Other Mobile Sources	5.66	43.11	16.93	2.56	1.37	1.248
Subtotal (Mobile Sources)	**20.08**	**179.24**	**41.93**	**2.76**	**2.12**	**1.76**
Grand Total for Sonoma County	**35.61**	**206.36**	**44.47**	**2.94**	**22.80**	**10.93**
Source: ARB 2007a						

Monitoring Station Data and Attainment Area Designations

Criteria air pollutant concentrations are measured at the Healdsburg and Santa Rosa monitoring stations in Sonoma County. Table 3.7-2 summarizes the air quality data from the most recent five years at these stations. Recent air pollutant monitoring data for these stations are considered representative of the air quality in the northern portion of Sonoma County.

Table 3.7-2
Summary of Annual Ambient Air Quality Data from 2002-2006

Pollutant	Averaging Time	Highest Measured Air Pollutant Levels				
		2002	2003	2004	2005	2006
Healdsburg at Airport						
Ozone	1-Hour	0.08 ppm	0.09 ppm	0.09 ppm	0.08 ppm*	0.05 ppm
	8-Hour	0.07 ppm	0.08 ppm	0.08 ppm	0.06 ppm*	0.05 ppm
Healdsburg at 133 Matheson Street						
Respirable Particulate Matter (PM_{10})	24-Hour	27 $\mu g/m^3$	32 $\mu g/m^3$	23 $\mu g/m^3$	26 $\mu g/m^3$	--
	Annual	16 $\mu g/m^3$	13 $\mu g/m^3$	14 $\mu g/m^3$	13 $\mu g/m^3$	--
Santa Rosa						
Carbon Monoxide (CO)	8-Hour	2.1 ppm	1.8 ppm	1.6 ppm	2.0 ppm	1.7 ppm
Nitrogen Dioxide (NO_2)	1-Hour	0.06 ppm	0.05 ppm	0.06 ppm	0.05 ppm	0.04 ppm
	Annual	0.013 ppm	0.013 ppm	0.012 ppm	0.011 ppm	0.011 ppm
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	76 $\mu g/m^3$	39 $\mu g/m^3$	27 $\mu g/m^3$	34 $\mu g/m^3$	--
	Annual	11 $\mu g/m^3$	9 $\mu g/m^3$	8 $\mu g/m^3$	8 $\mu g/m^3$	--

Note: ppm = parts per million and $\mu g/m^3$ = micrograms per cubic meter
Values reported in bold exceed ambient air quality standard
NA = data not available.
* Less than 80% data captured for that year.

Source: ARB 2007b

The State 1-hour and national 8-hour ozone standards were not exceeded in this five year period. The State 8-hour ozone standard, adopted in 2005, was not exceeded in 2005 or 2006. In addition, the State and national PM_{10} standards were not exceeded during this five year time period. $PM_{2.5}$ is not measured in Healdsburg, but monitoring data from Santa Rosa indicate compliance with both the State and national standards. All other criteria air pollutants are not measured because the area has a long history of compliance with applicable standards.

Both ARB and EPA use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called nonattainment-transitional. The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment.

Table 3.7-3 shows the most current attainment statuses for the northern portion of Sonoma County for each criteria air pollutant.

The area meets all national ambient air quality standards and is therefore considered as attainment or unclassified by EPA. Although the area meets ambient air quality standards for ozone, ARB considers it as suffering from "overwhelming transport" of ozone pollution from the San Francisco Bay Area (ARB 2007c). The area is classified as nonattainment by ARB. The highest measured ozone levels are at or near the standards. EPA expects designations for the new 24-hour $PM_{2.5}$ standard to take effect in 2010 based on 2007-2009 air quality data. Within the study area, mobile sources (e.g., on-road motor vehicles) are the largest contributor to levels of ROG, CO, NO_x, and SOx. Major sources of PM_{10} and $PM_{2.5}$ include residential fuel combustion, farming operations, and road dust.

EXISTING AIR QUALITY CONDITIONS-TOXIC AIR CONTAMINANTS

Concentrations of TACs or (in federal parlance) hazardous air pollutants (HAPs), are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the California Almanac of Emissions and Air Quality (ARB 2006), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Within the study area, diesel-fueled engines are the largest contributor to concentrations of TACs as there are no major stationary sources of TACs within the study area (ARB 2007d).

Table 3.7-3
Summary of Northern Sonoma County Attainment Status and Ambient Air Quality Standards

Pollutant	Averaging Time	California		National [1]		
		Standards [2,3]	Attainment Status [4]	Primary [3,5]	Secondary [3,6]	Attainment Status [7]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	N	-[9]	Same as Primary Standard	-
	8-hour	0.07 ppm[8] (137 µg/m^3)	–	0.08 ppm (157 µg/m^3)		A
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	U	35 ppm (40 mg/m^3)	–	U/A
	8-hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)[12]	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	–	0.053 ppm (100 µg/m^3)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (338 µg/m^3)	A	–		–
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	–	0.030 ppm (80 µg/m^3)	–	U/A
	24-hour	0.04 ppm (105 µg/m^3)	A	0.14 ppm (365 µg/m^3)	–	
	3-hour	–	–	–	0.5 ppm (1300 µg/m^3)	
	1-hour	0.25 ppm (655 µg/m^3)	A	–	–	–
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	A	-[11]	Same as Primary Standard	U/A
	24-hour	50 µg/m^3		150 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	U	15 µg/m^3	Same as Primary Standard	U/A
	24-hour	–	–	35 µg/m^3		
Lead[10]	30-day Average	1.5 µg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m^3	Same as Primary Standard	U/A
Sulfates	24-hour	25 µg/m^3	A	**No National Standards**		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	U			

Table 3.7-3
Summary of Northern Sonoma County Attainment Status and Ambient Air Quality Standards

Pollutant	Averaging Time	California		National [1]		
		Standards [2,3]	Attainment Status [4]	Primary [3,5]	Secondary [3,6]	Attainment Status [7]
Vinyl Chloride[10]	24-hour	0.01 ppm (26 µg/m³)	U/A			
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%.	U			

1 National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact EPA for further clarification and current federal policies.

2 California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

3 Concentration expressed first in units in which it was promulgated (i.e., parts per million [ppm] or micrograms per cubic meter [µg/m³]). Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Unclassified (U): A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
Attainment (A): A pollutant is designated attainment if the state standard for that pollutant was not violated at any site in the area during a 3-year period.
Nonattainment (N): A pollutant is designated nonattainment if there was a least one violation of a state standard for that pollutant in the area.
Nonattainment/Transitional (NT): A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Nonattainment (N): Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
Attainment (A): Any area that meets the national primary or secondary ambient air quality standard for the pollutant.
Unclassifiable (U): Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

8 This concentration effective May 17, 2006.

9 The 1-hour ozone NAAQS was revoked on June 15, 2005.

10 ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

11 Because of a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM_{10} standard on September 21, 2006.

12 The CAAQS were amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.03 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected later this year.

Sources: ARB 2007e, EPA 2007b

According to the U.S. Department of Conservation, California Geologic Survey (formerly the California Division of Mines and Geology) General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos (Guide) (Churchill and Hill 2002), the study area is not located in an area that is more likely to contain naturally occurring asbestos.

EXISTING AIR QUALITY CONDITIONS-ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and overall is subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human. There are no odor sources in the study area.

GREENHOUSE GASES AND GLOBAL CLIMATE CHANGE

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters the Earth's atmosphere from space. A portion of the radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected back toward space. The properties of the radiation have changed from high-frequency solar radiation to lower frequency infrared radiation when it is reflected. The frequencies at which bodies emit radiation are proportional to temperature. The Earth has a much lower temperature than the sun; therefore, the Earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate on Earth. Without the Greenhouse Effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the Greenhouse Effect are carbon dioxide (CO_2), methane (CH_4), ozone, nitrous oxide, water vapor, hydrofluorocarbons, chlorofluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs (with the exception of water vapor) in excess of natural ambient concentrations are responsible for intensifying the Greenhouse Effect and have led to a trend of warming of the Earth's climate, known as global climate change or global warming (Ahrens 2003). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (California Energy Commission [CEC] 2006a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CEC 2006a). Emissions of CO_2 are byproducts of fossil fuel combustion, and are the largest portion of human-caused GHG emissions by mass. Methane, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) associated with agricultural practices and landfills. CO_2 sinks, or reservoirs, include sequestration by vegetation or dissolution into the ocean, among other processes.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern, respectively. California is the 12th to 16th largest emitter of CO_2 in the world (CEC 2006a). California produced 492 million gross metric tons of CO_2 equivalent in 2004 (CEC 2006a). CO_2 equivalent is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the Greenhouse Effect. This potential, known as the global warming potential of a GHG depends on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, "Calculation References," of the General Reporting Protocol of the California Climate Action Registry (CCAR) (CCAR 2006), 1 ton of CH_4 has the same contribution to the Greenhouse Effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO2. Expressing emissions in CO_2 equivalent takes the contributions of all GHG emissions to the Greenhouse Effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7% of total GHG emissions in the state (CEC 2006a). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (22.2%) and the industrial sector (20.5%) (CEC 2006a).

According to the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature is expected to increase by 3–7°F by the end of the century, depending on future GHG emission scenarios (IPCC 2007). Resource areas other than air quality and atmospheric temperature could be indirectly affected by the accumulation of GHG emissions. For example, an increase in the global average temperature is expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. According to the CEC (CEC 2006b), the snowpack portion of the water supply could potentially decline by 30–90% by the end of the 21st century. A study cited in a report by the DWR projects that approximately 50% of the statewide snowpack will be lost by the end of the century (Knowles and Cayan 2002). Although current forecasts are uncertain, it is evident that this phenomenon could lead to significant challenges in securing an adequate water supply for a growing population. An increase in precipitation falling as rain rather than snow could also lead to increased potential for floods because water that would normally be held in the Sierra Nevada snowpack until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levee/flood control system (DWR 2006).

Another outcome of global climate change is sea level rise. Sea level rose approximately 7 inches during the last century (CEC 2006b), and it is predicted to rise an additional 7–22 inches by 2100, depending on the future levels of GHG emissions (IPCC 2007). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion, and disruption of wetlands (CEC 2006b). As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available.

B. Regulatory Setting

Air quality within the northern portion of Sonoma County is regulated by EPA, ARB, and NSAPCD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL REGULATORY ISSUES

Environmental Protection Agency

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 3.7-3, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA must review all state SIPs to determine whether they conform to the mandates of the CAA and the amendments thereof, and to determine whether implementing them will achieve air quality goals. If EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) that imposes additional control measures may be prepared for the nonattainment area. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may cause sanctions to be applied to transportation funding and stationary air pollution sources in the air basin.

STATE REGULATORY ISSUES

Air Resources Board

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (CAAQS) (see Table 3.7-3). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels. Geographical areas in the State that exceed the NAAQS are called non-attainment areas. There are 15 non-attainment areas for the national ozone standard and two non-attainment areas for the $PM_{2.5}$standard. The Ozone SIP and $PM_{2.5}$ SIP were adopted by ARB and sent to EPA for approval on November 16, 2007. The SIP included strategies on how each state non-attainment area will attain federal standards. To do this, the SIP identified the amount of pollution emissions that must be reduced in each area to meet the standard and the emission controls needed to reduce the necessary emissions.

LOCAL REGULATORY ISSUES

Northern Sonoma County Air Pollution Control District

The role of NSCAPCD is to achieve clean air to protect public health and the environment with a primary responsibility of attaining and maintaining national and State ambient air quality standards. NSCAPCD is responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, and monitoring ambient air quality and meteorological conditions.

ARB and EPA have jurisdiction over controlling emissions from mobile sources. ARB has ruled that the NSCAPCD is a down-wind receptor of ozone transported from the San Francisco Bay Area. As such, NSCAPCD relies on ARB ozone control plans to reduce ambient levels in northern Sonoma County by reducing emissions in upwind areas. Because PM_{10} standard violations have continued for many years, NSCAPCD must persevere in controlling PM_{10} emissions. Because violations usually occur in winter, the focus of control has been on wood burning appliances, and this effort has met with some success.

As mentioned above, NSCAPCD adopts rules and regulations. All projects are subject to NSCAPCD rules and regulations in effect at the time of construction/operation. Specific rules applicable to the construction of the proposed project may include, but are not limited to:

- Rule 220—New Source Review Standards
- Rule 400—General Limitations
- Rule 410—Visible Emissions

- Rule 420—Particulate Matter
- Rule 430—Fugitive Dust Emissions

Sonoma County General Plan

The Sonoma County General Plan Resource Conservation Element addresses pollutants from mobile sources (e.g., transportation sources). The following goals and policies would be relevant to the proposed project:

Goal RC-13: Preserve and maintain good air quality and provide for an air quality standard that will protect human health and preclude crop, plant, and property damage in accordance with the requirements of the CAAQS and NAAQS.

Policy RC-13a: Require that commercial and industrial development projects be designed to minimize air emissions. Reduce direct emissions by decreasing the need for space heating.

Policy RC-13c: Refer projects to the local air quality districts for their review.

Policy RC-13d: Review proposed changes in land use designations for potential deterioration of air quality and deny them unless they are consistent with the air quality levels projected in the general plan EIR.

Odors

The NSCAPCD has established a nuisance rule to address odor issues. Rule 400 states that air contaminants will not be discharged in quantities sufficient to constitute a public nuisance to any considerable number of persons or the public or that would endanger the comfort or repose of any person or the public. Odors would be considered a nuisance by NSCAPCD if a complaint is received from a "significant" number of people and the odor issue is verified upon inspection.

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on toxic air contaminants (TACs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Instead, EPA and ARB regulate hazardous air pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum available control technology (MACT) or best available control technology for toxics (BACT) to limit emissions. These in conjunction with additional rules set forth by NSCAQMD establish the regulatory framework for TACs.

Acrolein is produced during incomplete combustion of the burning of fossil fuels in power plants, cars and trucks, and from forest fires. In 1993, CARB designated acrolein as a TAC. In 1999, OEHHA set the acute non-cancer reference exposure level (CREL) of 0.19 $\mu g/m^3$ (0.09 ppbv) for acrolein, and in 2001, it set the chronic (CREL) of 0.06 $\mu g/m^3$ (0.03 ppbv). In November 1997, OEHHA published proposed revisions to these values, with the CREL increasing to 2.3 $\mu g/m^3$ (1.0 ppbv) and the CREL increasing to 0.1 $\mu g/m^3$ (0.05 ppbv).

Acrolein's impact is mainly as a powerful irritant to the eyes and inhalation pathways, including the throat and lungs. The proposed AREL of 2.3 $\mu g/m^3$ is set at a level to protect against eye irritation. The proposed CREL of 0.10 μg/m^3 is set at a level to prevent lesions of the lung due to long-term exposure.

CARB estimated that approximately 2,200 tons of acrolein was emitted into California's air during the year. On a statewide basis, the population-weighted average acrolein concentration in ambient air was 1.2 μg/m^3 (0.53 ppbv) (OEHHA 2007).

Federal Hazardous Air Pollutant Programs

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards (NES) for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources. The CAAA called on EPA to promulgate emissions standards in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the CAAA required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) (Hot Spots Act). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review must occur before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure (ACTM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel-exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators, trucks). Upcoming milestones include the low-sulfur diesel fuel requirement and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020 from the estimated year-2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

ARB published the Air Quality and Land Use Handbook: A Community Health Perspective, which provides guidance concerning land use compatibility with TAC sources (ARB 2005). While not a law or adopted policy, the handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries dry cleaners, gasoline stations, and industrial facilities, to help keep children and other sensitive populations out of harm's way. A number of comments on the handbook were provided to ARB by air districts, other agencies, real estate representatives, and others. The comments included concern over whether ARB was playing a role in local land use planning, the validity of relying on static air quality conditions over the next several decades in light of technological improvements, and support for providing information that can be used in local decision making.

In July 2001, ARB adopted an airborne toxics control measure (ATCM) for construction, grading, quarrying, and surface mining operations that regulates grading and excavation activities in areas of serpentine or ultramafic rocks. In addition, the Governor's Office of Planning and Research issued a memorandum providing guidance to Lead Agencies in analyzing the impacts of naturally occurring asbestos (NOA) through the CEQA review process.

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under NSCAPCD Regulation I all stationary sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards and air toxics control measures. NSCAPCD limits emissions and public exposure to TACs through a number of programs. NSCAPCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. NSCAPCD Regulation III also contains toxic control rules.

Sources that require a permit are analyzed by NSCAPCD on the basis of their potential to emit toxics. If it is determined that the project would emit a significant amount of toxics, sources must implement the best available control technology for TACs (T-BACT) to reduce emissions. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs. It is important to note that NSCAPCD's air quality permitting process applies to stationary sources; properties that are exposed to elevated levels of nonstationary type sources of TACs, and the nonstationary type sources themselves (e.g., on-road vehicles), are not subject to air quality permits. Further, for reasons of feasibility and practicality, mobile sources (cars, trucks, etc.) are not required to implement T-BACT, even if they do have the potential to expose adjacent properties to elevated levels of TACs. Rather, emissions controls on such sources (e.g., vehicles) are subject to regulations implemented on the federal and state levels.

EMISSIONS OF GREENHOUSE GASES

There are currently no state or local thresholds of significance for GHG emissions. However, federal, state, and local governments have studied and regulated the impacts of global climate change for several years. The following summarizes federal, state, and local actions dealing with global climate change and emissions of CO_2 equivalents (CO_2E).

Executive Order S-3-05

In 2005, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The executive order directed the secretary of the California Environmental Protection Agency (Cal/EPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The secretary was directed to submit biannual reports to the governor and California Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the secretary of Cal/EPA created the California Climate Action Team, made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of California businesses, local governments, and communities and through state incentive and regulatory programs.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

In 2006, California passed the California Global Warming Solutions Act (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 identifies global warming as a serious environmental threat with the potential to exacerbate air quality problems, reduce the quantity and supply of water from the Sierra snowpack, cause a rise in sea levels, damage marine ecosystems, and increase human health-related problems. AB 32 requires CARB to adopt rules and regulations that, by 2020, would achieve GHG emissions equivalent to statewide levels in 1990 levels.

Massachusetts v. EPA.

On April 2, 2007, the United States Supreme Court held GHGs are pollutants that can be regulated under the federal Clean Air Act. The Court held that EPA must determine whether GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

Senate Bill 97

In August 2007, Governor Schwarzenegger signed SB 97 (Chapter 185, Statutes of 2007; Public Resources Code Sections 21083.05 and 21097), which acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions (or the effects of GHG emissions), as required by CEQA, by July 1, 2009. The Resources Agency received the guidelines from OPR on April 13, 2009 and adopted them on December 30, 2009. The guidelines became effective on March 18, 2010.

The guidelines do not propose a specific threshold for determining whether a project's contribution to global climate change is significant. Rather, the draft guidelines provide guidance on determining the significance of impacts resulting from a project's greenhouse gas emissions as well as appropriate mitigation measures. The guidelines indicate that lead agencies have discretion to determine which type of methodology to use to evaluate greenhouse gas emissions, given that such methodologies are evolving.

CAPCOA January 2008 CEQA and Climate Change White Paper

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) issued a "white paper" on evaluating GHG emissions under CEQA. The white paper does not provide CEQA guidelines and has not been adopted by any regulatory agency. The white paper was instead offered as a resource to assist lead agencies in considering climate change in environmental documents.

Among other items, the white paper addresses the identification of new emissions, the establishment of baseline emissions, the analysis of "cumulatively considerable" emissions under CEQA, the utility of a "business as usual" scenario.

OPR June 2008 Technical Advisory on CEQA and Climate Change

OPR published a June 2008 Technical Advisory as interim guidance during implementation of SB 97. The Advisory provides informal guidance for public agencies as they address the issue of climate change in their CEQA documents. The document offers recommendations for identifying GHG emissions, determining significance under CEQA, and mitigating impacts.

The Advisory states that lead agencies under CEQA should develop their own approach to performing a climate change analysis, for projects that generate GHG emissions. It states that lead agencies should attempt to assess whether project emissions are individually or cumulatively significant, and implement strategies to avoid, reduce, or otherwise mitigate the impacts of those emissions when impacts are potentially significant.

Senate Bill 375

Signed in September 2008, SB 375 (Chapter 728, Statutes of 2008) endeavors to align regional transportation planning, GHG reduction targets, and land use and housing allocation by requiring metropolitan planning organizations (MPOs) to adopt sustainable communities strategies (SCS) or alternative planning strategies (APS) that prescribe land use allocations in regional transportation plans and meet GHG reduction targets promulgated by CARB for the years 2020 and 2035.

Climate Change Scoping Plan

CARB released a Climate Change Proposed Scoping Plan pursuant to AB 32 in October 2008 and adopted the Plan on December 12, 2008. The Plan outlines proposed State strategies to achieve the 2020 GHG emissions limit. Key elements of the Plan include the following recommendations:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewables energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
4. Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel standard;
6. Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

The Scoping Plan would subject approximately 85 percent of the state's emissions to a cap-and-trade program in which covered sectors would be placed under a declining emissions cap. Emissions reductions will be achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. It is expected that emission reduction from this cap-and trade program will account for a large portion of the reductions required by AB 32.

CARB Preliminary Draft Staff Proposal, October 2008

In October 2008, CARB also separately issued a Staff Proposal as its first step toward developing recommended statewide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use. The proposal focused on common project types that collectively generate substantial GHG emissions. CARB intended to develop statewide thresholds in these sectors to advance climate objectives, streamline project review, and encourage statewide consistency and uniformity in the CEQA analysis of GHG emissions. CARB also sought to spur mitigation of a substantial portion of GHG emissions from new projects, consistent with CEQA's mitigation requirement. CARB abandoned this effort, however, and has left this task to individual air quality districts to develop and implement within their own jurisdictions. CEQA's mitigation requirement is being implemented by the County of Sonoma and other agencies on a project-by-project basis.

EPA Clean Air Act (CAA) Findings

On December 7, 2009 the Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA. The Administrator first found that current and projected concentrations of the six key GHGs in the atmosphere threaten the public health and welfare of current and future generations. The Administrator further found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution. These findings were published in the Federal Register became effective on January 14, 2010.

CEQA Guidelines Amendments for Greenhouse Gas Emissions

On December 30, 2009, the California Natural Resources Agency approved amendments to the state CEQA Guidelines (including Appendix G), to address impacts of GHG emissions, as directed by Senate Bill 97. These amendments became effective March 18, 2010. The amendments revise Appendix G to state an impact related to global climate change is considered significant if the proposed project would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or,

- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

BAAQMD Draft California Environmental Quality Act Air Quality Guidelines, December 2009

In December 2009, the Bay Area Air Quality Management District (BAAQMD) released a draft revision to its CEQA Air Quality Guidelines that include proposed thresholds of significant for GHG emissions. These Draft Guidelines provide that project-level GHG emissions would be less than significant if the project complies with the provisions of a locally-adopted Climate Action Plan. If no such qualifying Climate Action Plan has been adopted, then the Guidelines would apply a significance threshold of 1,100 metric tons per year of GHG's as CO_2e to determine whether GHG emissions would be cumulatively considerable and cause a cumulatively significant impact to global climate change. These Guidelines and their associated thresholds of significance have not yet been formally adopted by BAAQMD, and are pending a board meeting approval in July 2010.

C. Potential Impacts and Mitigations

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines and NSCAPCD, have been used to determine whether implementation of the proposed project would result in significant air quality impacts. According to Appendix G of the CEQA Guidelines, a project will typically have a significant impact if it meets any of the following criteria:

- Conflict with or obstruct implementation of the applicable air quality plan;

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable NAAQS or CAAQS (including releasing emissions that exceed quantitative thresholds for ozone precursors);

- Expose sensitive receptors to substantial pollutant concentrations; or

- Create objectionable odors affecting a substantial number or people.

As stated in Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district—in this case, NSCAPCD—

may be relied upon to make the above determinations. Thus, as identified by NSCAPCD, implementation of the proposed project would result in significant air quality impacts if:

- NSCAPCD-recommended best management practices (BMPs) are not incorporated into project design or implemented during project construction;
- long-term operational (regional) emissions would exceed NSCAPCD-recommended mass emissions standards of 40 tpy for ROG and NOx, 100 tpy for CO, and 15 tpy for PM_{10};
- long-term operational (local) mobile-source emissions of CO would result in or contribute to CO concentrations that exceed the California 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 parts per million (ppm); or
- sensitive receptors would be exposed to TAC emissions (e.g., stationary or mobile-source) that exceed 10 chances per million for excess cancer risk and/or a hazard Index of 1 for noncancer risk for the Maximally Exposed Individual (MEI).

Regarding the second significance threshold, NSCAPCD does not have CEQA guidelines or specific adopted thresholds for ozone precursors or PM_{10} emitted by new indirect sources (e.g., residential development). The standards of 40 tpy for ROG and NO_X, 100 tpy for CO, and 15 tpy for PM_{10} are based on rules for stationary sources recommended by NSCAPCD.

As stated above, neither ARB nor any air district in California, including the NSCAPCD, has adopted a significance threshold for analyzing GHG emissions generated by a proposed project or a methodology for analyzing air quality impacts related to global warming. As noted above, however, BAAQMD is nearing adoption of a 1,100 MT/y CO_2e threshold for GHG emissions. Although the project is not in the BAAQMD, the NSCAPCD would likely adopt the proposed threshold following BAAQMD approval.

PROJECT IMPACTS

ARM Plan PEIR Findings

The ARM Plan PEIR analyzed potential air quality impacts in Section 8.12, Air Quality. The PEIR determined that implementation of the ARM Plan could result in a significant effect if it would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant contributions. The PEIR also noted that a future mining project could result in a significant impact if any relevant BAAQMD or NSCAPCD regulations or criteria of significance would be exceeded.

The PEIR specifically found that haul trucks and other project traffic could cause localized CO emissions at nearby intersections, although it noted that the development of cleaner vehicles and oxygenated fuels and the implementation of federal and state regulations would reduce overall CO emissions in the program area. The PEIR also noted the potential for particulate and dust emissions from quarry projects, but found they could be reduced to less than significant through the implementation of Mitigation Measure 8.12-2.

Project Impacts Not Discussed Further

Implementation of the proposed project would not result in any construction-related emissions of criteria air pollutants or precursors, TACs, or odors. All project components would be operational in nature (as described in Section 3.0, all mining related activities, including the installation of temporary bridges, are considered as part of operational effects).

The project has no construction-related impacts. The project has nevertheless implemented BAAQMD's mitigation measures for construction.

Impact 3.7-1 The project would generate long-term operational (regional) emissions of criteria air pollutants and precursors. The generation of PM_{10} would be significant but other criteria pollutant and precursors would be less than significant.

The project would result in emissions of criteria air pollutants (e.g., CO and PM_{10}) and precursors (e.g., ROG and NO_X) from direct disturbance of land surfaces (e.g., excavation associated with mining-related activities and equipment and vehicle use on land surfaces) and exhaust emissions resulting from off-road equipment, haul truck (for material/equipment transport), and worker vehicle use. Worst-case project-generated, operation-related emissions of criteria air pollutants and precursors were modeled in accordance with NSCAPCD-recommended methodologies. Project-generated emissions of criteria air pollutants (e.g., CO and PM_{10}) and precursors (e.g., ROG and NO_X) were modeled based on project specifications (e.g., equipment types and number requirements, duration of mining operations, annual volume of mined material) described in Chapter 1, Introduction and Project Description; traffic data conducted for this project (e.g., number of haul truck and worker commute trips), and default and NSCAPCD-recommended settings and parameters attributable to the activity period and site location. The categories modeled for air quality emissions and their assumptions are described below.

- Worker commute emissions: 5 workers are assumed to travel to and from their home to the work site each day for 110 days (5 months * 22 days per month). The travel distance is based on the default model setting of 20 miles one-way.

- Off-site, on-road material transport emissions: The total vehicle miles travel (VMT) is assumed to be 338,800 miles/year based on 28,000 one-way truck trips (350,000 tons of material / 25 tons per truck load * 2 vehicle trips per truck) and 12.1 miles of travel on paved roads from the Syar processing plant in Healdsburg to the northern-most portion of the study area (Route 8 at Geyserville Road). This scenario represents the worst case with mining the maximum aggregate allowable per the mining plan. In addition, this scenario accounts for the longest route being used. Over the life of the project it is expected that emissions would on average be less since the production maximum may not be reached in every year and shorter routes would be used in most years.

- On-site, off-road heavy-duty equipment emissions: Six pieces of equipment (front-end loader, bulldozer, motor grader, aggregate hauler, fuel and lube truck, and a water truck) are assumed to operate continuously during mining operations within the gravel bars (110 days). Other on-site equipment would include a crane that would operate only for two days per year to establish the temporary access routes to the Russian River at the beginning and end of each mining season.

- Fugitive dust emissions from direct disturbance and haul truck travel: The amount of mined aggregate is assumed to be 350,000 tons and the VMT on unpaved roads is assumed to be 84,000 miles (28,000 one way truck trips * 3 miles). The unpaved distance assumes the longest distance of travel from Route 8 through the gravel bars to Bar S-5 (the longest alternative access route). Although this alternate route was not specified in the project description, it was chosen to obtain a conservative figure and maximum impact. It is assumed that this route could be used if others are not available. The modeling depicts the worst case scenario with the longest route. Many shorter routes will be used throughout the project years and therefore, the impacts would be less than modeled here for most years, and for the average over the project life. Table 3.7-4 summarizes the modeled, annual project-generated, operation-related emissions of each criteria air pollutant and precursor. Operation-related regional air quality effects were determined by comparing these modeling results with applicable standards recommended by NSCAPCD. The results presented in Table 3.7-4 account for a 50% reduction in emissions due to dust control measures as described in the project (i.e., watering for dust control). Appendix H shows the detailed modeling input parameters and results.

As shown in Table 3.7-4 modeled emissions of ROG, NOx and CO would not exceed NSCAPCD-recommended standards. Modeled emissions of $PM_{10,}$ which would primarily be in the form of fugitive dust associated with ground disturbance activities such as aggregate extraction, would exceed the NSCAPCD standard of 15 tpy ($PM_{2.5}$ is a subset of PM_{10}, and as such, the evaluation of short-term construction-generated PM_{10} would be similar for $PM_{2.5}$). Thus, project-generated, operation-related emissions could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations. Potential effects associated with the emission of PM_{10} would be considered significant. To further reduce impacts, additional dust control BMP measures would be required.

Table 3.7-4
Summary of Modeled Annual Project-Generated Operational Emissions of Criteria Air Pollutants and Precursors and CO_2

Source	TPY				
	ROG	**NO_X**	**CO**	**PM_{10}**	**CO_2e**
Fugitive PM_{10} Dust				78.7[1]	
On-Site, Off-Road Heavy-Duty Equipment	0.2	1.8	0.6	0.1	273.7
Off-Site, On-Road Material Transport	0.2	2.7	2.3	0.1	622.1
Worker Commute Vehicle Exhaust	0.0	0.0	0.3	0.0	622.5
Total	0.4	4.5	3.2	**78.9**	**958.3**
NSCAPCD-Recommended Standards (tpy)	40.0	40.0	100.0	15.0	-

Notes:
NO_X = oxides of nitrogen; NSCAPCD = Northern Sonoma County Air Pollution Control District; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; CO = carbon monoxide; ; CO_2e = carbon dioxide equivalent; tpy = tons per year
[1] Accounts for a 50% reduction in emissions due to best management practices included in the project description (e.g., watering). See Appendix H for detailed input parameters and modeling results.
Sources: Modeling performed by AECOM in 2009

Mitigation Measures

3.7-1 Syar shall implement the following feasible control measures recommended by BAAQMD to limit emissions of PM_{10} for all project phases (NSCAPCD defers to BAAQMD for recommended mitigation measures):

- Water all active mining areas and haul routes at least twice daily and more often during windy periods (i.e., 10 mph). Active areas adjacent (i.e., property boundaries within 500 feet) to residences shall be kept damp at all times.
- Suspend excavation and grading activity when instantaneous wind gusts exceed 25 mph.
- Cover all hauling trucks or maintain at least two feet of freeboard.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes.
- Apply water at least twice daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and staging areas.
- Sweep all paved access roads, parking areas, staging areas and streets daily wherever visible soil material is deposited or tracked. All sweeping will be performed with water sweepers.
- Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
- Enclose, cover, water twice daily, hydroseed, or apply (nontoxic) soil binders to exposed stockpiles.
- Where and when feasible, wash off the tires or tracks of all trucks and equipment leaving the site.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.7-1 would reduce fugitive PM_{10} dust emissions by an estimated 37.5 tpy (see Appendix H), over the 50% reduction attributable to the dust control requirements proposed as part of the project (see Chapter 1, Introduction and Project Description). However, mitigated emissions of PM_{10} would still total 39.34 tpy (see Appendix H), and exceed the NSCAPCD standard of 15 tpy. Thus, this impact would be significant and unavoidable.

Impact 3.7-2 The project would generate long-term operational (local) mobile-source emissions of carbon monoxide.

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. As a result, NSCAPCD recommends analysis of CO emissions at a local rather than a regional level.

The Transportation Project-Level Carbon Monoxide Protocol (Garza et al. 1997) states that signalized intersections that operate at an unacceptable LOS represent a potential for a CO violation. Thus, an analysis of CO concentrations is typically recommended for receptors located near signalized intersections that are projected to operate at LOS E or F.

According to Section 3.6, Traffic and Circulation, no signalized intersections in the study area would operate at an unacceptable LOS under proposed project conditions (see Section 3.6, Traffic and Circulation). Thus, long-term operational (local) mobile-source CO emissions would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. As a result, this impact would be less than significant.

Mitigation Measure

None

Impact 3.7-3 The project would result in the exposure of sensitive receptors to project-generated operation-related emissions of toxic air contaminants, including acrolein.

Operation-related activities would result in project-generated emissions of TACs (e.g., diesel PM, including acrolein) from heavy-duty truck travel on proposed haul routes for material transport and heavy-duty equipment at the proposed mining sites. ARB identified diesel PM as a TAC in 1998.

A human health risk assessment (HRA) was performed to determine the exposure (i.e., cancer risk levels) of existing nearby sensitive receptors (e.g., residences) from on-site diesel PM emission sources. Figures 3.7-1 through 3.7-3 show general locations of existing nearby sensitive receptors and Figures 1-2 through 1-4 show the proposed haul routes and mining areas. Specific receptors would be the same as those identified as noise impacted in the noise analysis prepared for this project because both noise and diesel PM impacts affect those occupied receptors nearest to the mining operations and haul routes. For the purposes of modeling and risk calculations, six tentative project phases and three reaches are identified according to the Syar mining plan (Syar 2005).

The HRA included air quality dispersion modeling conducted using the EPA Industrial Source Complex Short Term (ISCST3) Version 02035 air dispersion model to determine the ground-level diesel PM concentrations from on-site trucks and equipment at existing nearby sensitive receptors. The air dispersion modeling was based on meteorological data from the Healdsburg monitoring station. Emission rates for heavy-duty trucks and equipment were based on factors and default parameters from the Construction Emissions Model (Version 5.2) (SMAQMD 2006). Equipment types and number requirements were based on the information provided in Section 1.0 ”Introduction”. Refer to Appendix I for detailed modeling input data.

Ground-level diesel PM concentrations were used to conservatively estimate potential increases in cancer risk as a result of continuous exposure to existing nearby sensitive receptors. Cancer risk is expressed as excess cancer cases per one million exposed individuals. Cancer risk from exposure to diesel PM was calculated by multiplying the modeled annual average concentrations of diesel PM by a cancer risk factor (0.000415 at residential receptors) and then adjusted for the length of the exposure period. In a similar manner, modeled concentrations of diesel PM, which also have noncarcinogenic (chronic) adverse health effects, were used to estimate resultant hazard indices (HIs). The level of chronic risk is based on an HI, determined by dividing the modeled annual average concentrations by the reference exposure level (REL) for diesel PM. The REL is the concentration at or below which no adverse health effects are anticipated. The Office of Environmental Health Hazard Assessment (OEHHA) has recommended an ambient concentration of 5 micrograms per cubic meter (μg/m3) as the chronic inhalation REL for diesel PM (OEHHA 2006). Based on the dispersion modeling, the maximum average annual concentration of diesel PM would be 0.164 μg/m3, which results in a chronic HI of 0.0328. Because the maximum chronic HI is less than the significance threshold of 1.0, there would be no noncancer chronic risk associated with the project.

Table 3.7-5 summarizes the modeled excess cancer risk from motor vehicle travel (e.g., employee commute and meal trips), heavy-duty truck travel on proposed haul routes for material transport, and heavy-duty equipment at the proposed mining areas.

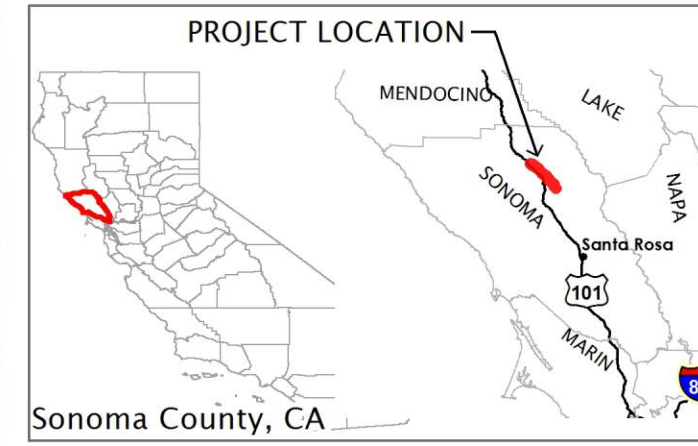
<table>
<tr><th colspan="6">Table 3.7-5
Health Risk Assessment Summary: Diesel PM and Acrolein</th></tr>
<tr><th colspan="6">Diesel PM Maximum Modeled Concentration</th></tr>
<tr><th>All Sources*</th><th>Annual Max Concentration (μg/m^3)</th><th>1-hr Max Concentration (μg/m^3)</th><th>Receptor Number**</th><th colspan="2">Chronic REL (μg/m^3)</th></tr>
<tr><td></td><td>0.164</td><td>12.8</td><td>1</td><td colspan="2">5</td></tr>
<tr><th colspan="6">Maximum Diesel PM Cancer Risk, 15 Year Exposure</th></tr>
<tr><th></th><th>Annual Concentration (μg/m3)</th><th>Maximum Impacted Receptor</th><th colspan="3">Cancer Risk (per million)</th></tr>
<tr><td>Phase 4</td><td>0.0657</td><td>9</td><td colspan="3">1.8</td></tr>
<tr><td>Reach 1</td><td>0.154</td><td>1</td><td colspan="3">4.3</td></tr>
<tr><th colspan="6">Maximum Diesel PM Cancer Risk, 9 Year Exposure</th></tr>
<tr><th></th><th>Annual Concentration (μg/m^3)</th><th>Maximum Impacted Receptor</th><th colspan="3">Cancer Risk (per million)</th></tr>
<tr><td>Phase 4</td><td>0.0657</td><td>9</td><td colspan="3">1.6</td></tr>
<tr><td>Reach 1</td><td>0.154</td><td>1</td><td colspan="3">3.8</td></tr>
<tr><th colspan="6">Maximum Annual Average and 1-hr Acrolein Concentrations</th></tr>
<tr><th rowspan="2"></th><th rowspan="2">Annual Max Concentration (μg/m^3)</th><th rowspan="2">1-hr Max Concentration (μg/m^3)</th><th rowspan="2">Ambient Statewide Background (μg/m^3)</th><th colspan="2">REL (μg/m^3)</th></tr>
<tr><th>Chronic</th><th>Acute</th></tr>
<tr><td>All Sources</td><td>0.00213</td><td>0.166</td><td>1.2</td><td>0.06</td><td>0.19</td></tr>
<tr><td colspan="6">* Phases and Reaches are temporally and spatially separated project portions as described in the HRA assessment (Appendix I) and are derived from Section 1, “Project Description”.
** Sensitive receptors are numbered as shown in Figures 3.7-1 and 3.7-2.</td></tr>
</table>

Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
Sonoma County California

AECOM

April, 2010



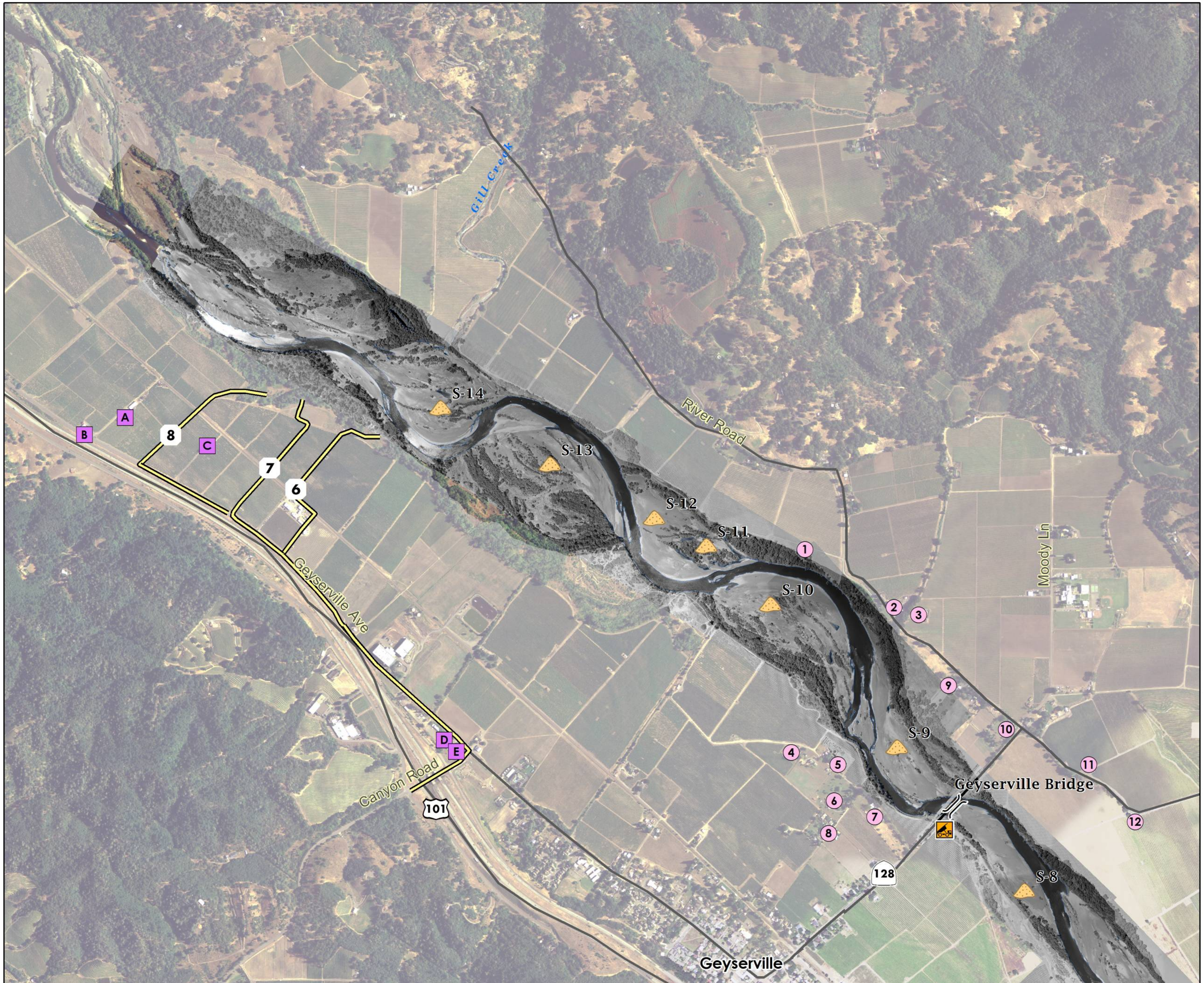


Figure 3.7-1
Sensitive Receptor Locations: Reach 1

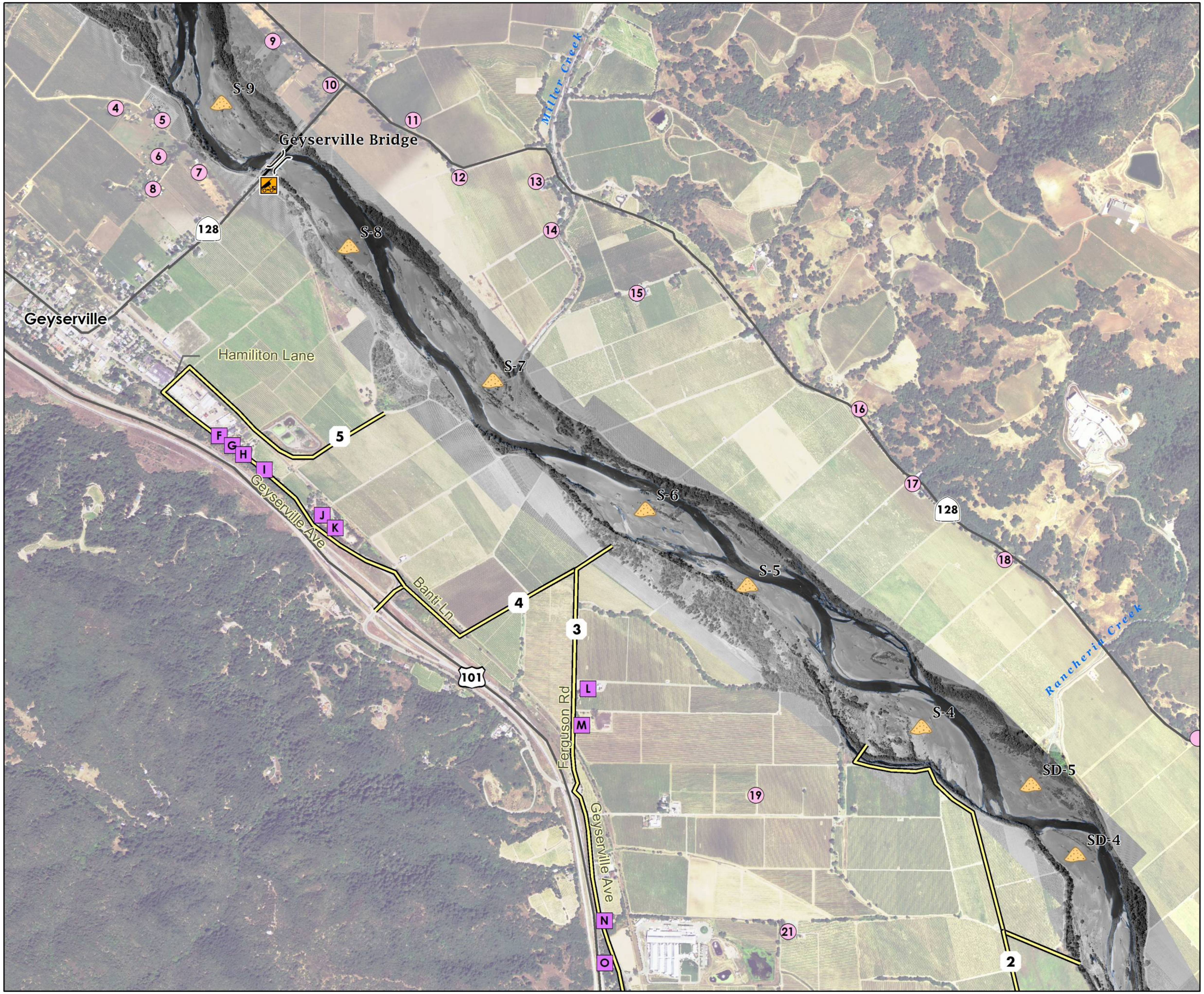
- Sensitive Receptors Along Haul Routes
- Sensitive Receptors in the Vicinity of the Proposed Mining Locations
- Gravel Bars
- Staging Area
- Access Roads
- Russian River Course (May 2006)
- Main Roads

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

0 1,250 2,500 Feet

Source: Syar Industries inc. EDAW,
Projection State Plane NAD 1983 California II

Placeholder – back of Figure 3.7-1



Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
Sonoma County California

AECOM

April, 2010

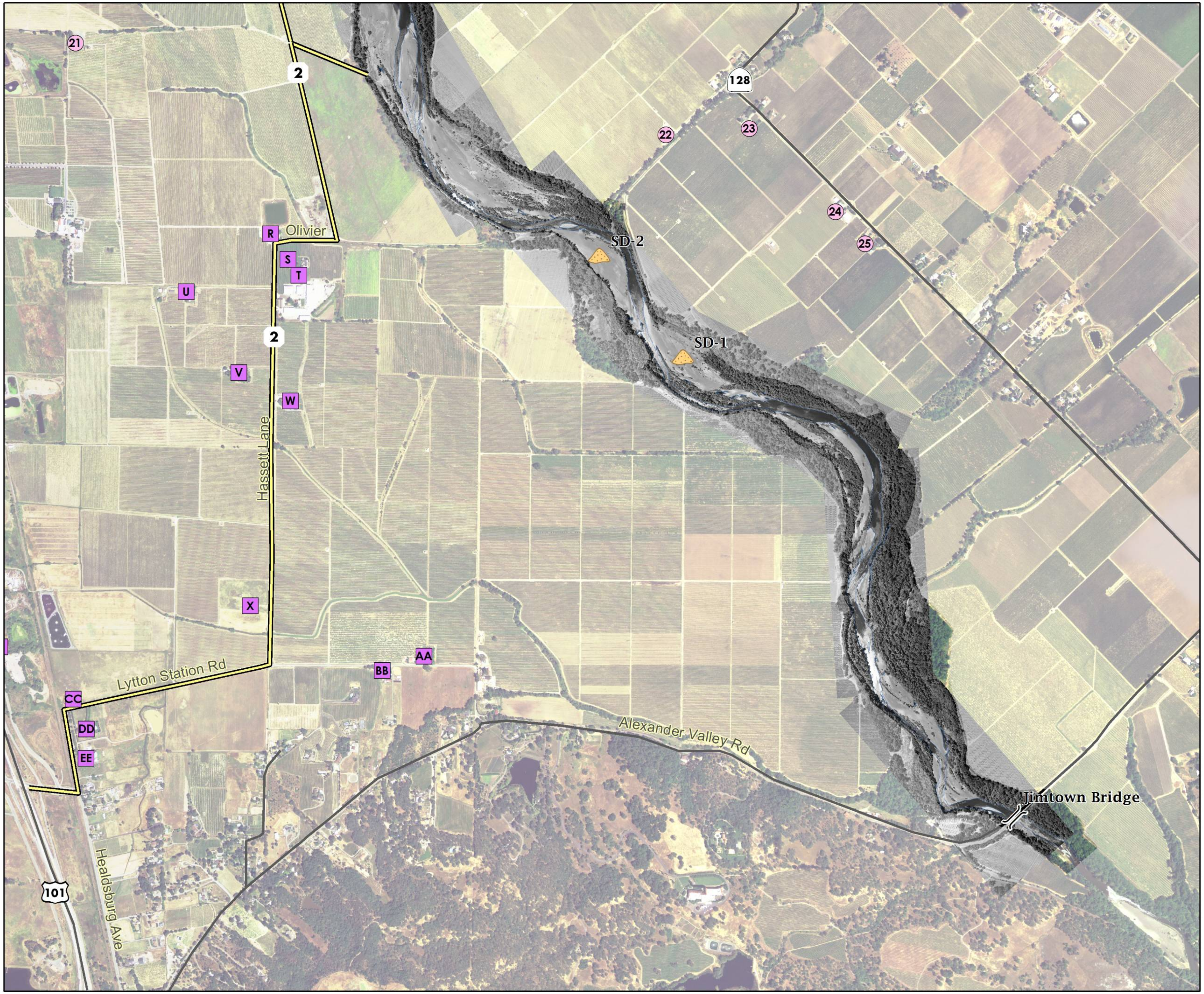
Figure 3.7-2
Sensitive Receptor Locations: Reach 2

- Sensitive Receptors Along Haul Routes
- Sensitive Receptors in the Vicinity of the Proposed Mining Locations
- Gravel Bars
- Staging Area
- Access Roads
- Russian River Course (May 2006)
- Main Roads

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

Source: Syar Industries inc. EDAW,
Projection State Plane NAD 1983 California II

Placeholder – back of Figure 3.7-2



Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
Sonoma County California

AECOM

April, 2010

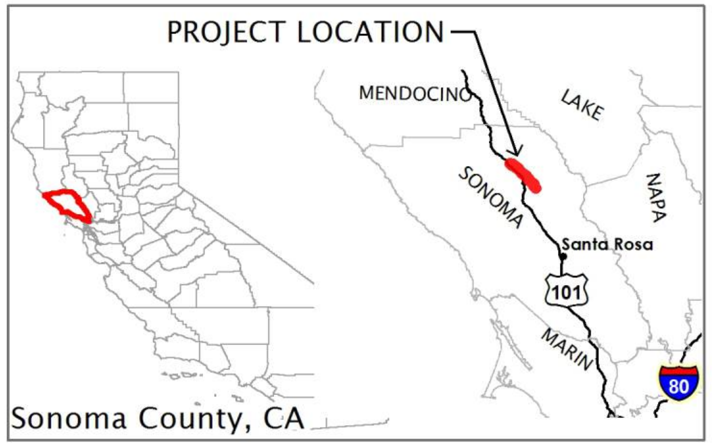


Figure 3.7-3
Sensitive Receptor Locations: Reach 3

- Sensitive Receptors Along Haul Routes
- Sensitive Receptors in the Vicinity of the Proposed Mining Locations
- Gravel Bars
- Staging Area
- Access Roads
- Russian River Course (May 2006)
- Main Roads

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)

0 1,250 2,500 Feet

Source: Syar Industries inc. EDAW,
Projection State Plane NAD 1983 California II

Placeholder – back of Figure 3.7-3

Based on the results of the modeling conducted (Table 3.7-5 and Appendix I), the project-generated, operation-related excess cancer risk from diesel PM) would not exceed the significance threshold of 10 chances in one million at nearby existing sensitive receptors. Additionally, acrolein concentrations are predicted to be well below statewide background levels and are not expected to exceed acute or chronic RELs at sensitive receptor sites. Consequently, project-generated, operation-related diesel PM and acrolein emissions would not expose nearby existing sensitive receptors to substantial pollutant concentrations. As a result, this impact would be less than significant.

Impact 3.7-4 Exposure of Sensitive Receptors to Odor Emissions.

The project would generate diesel exhaust from heavy-duty truck travel on proposed haul routes for material transport, as well as heavy-duty equipment at the proposed mining sites. Emissions of diesel exhaust, which could be an unpleasant odor to some, would be seasonal, vary in location year to year, and would be highly dispersive in nature (Zhu and Hinds 2002). In addition, the proposed project would not include the building of any sensitive uses (e.g., residences, schools) near any existing odor sources. Thus, operation-related activities would not create objectionable odors affecting a substantial number of people. As a result, this would be a less-than-significant impact.

Mitigation Measure

None

Impact 3.7-5 The project would result in a cumulative net increase in long-term greenhouse gas emissions.

Operation-related activities would result in a net increase in GHG emissions. Sources of GHG emissions would include off-road equipment, material transport, and worker commute exhaust, predominately in the form of CO_2 rather than methane (CH_4) and nitrous oxide (N_2O), or other GHG's.

Worst-case project-generated, operation-related emissions of CO_2 were modeled using EMFAC 2007 and Offroad 2007 emission factors contained in URBEMIS 2007, Version 9.2.4, which was released June 25, 2007 (Rimpo and Associates 2008). Emissions of CH_4 and N_2O were modeled using California Climate Action Registry General Reporting Protocol Version 3.0 (CCAR 2008). Emissions of CH_4, and N_2O are calculated in CO_2 equivalents (CO_2e) which take into account the global warming potential (GWP) for each pollutant. GWP is the metric used to compare how many kilograms of one pollutant it would take to have the same greenhouse effect as one kilogram of CO_2. CO_2e enables the comparison of individual GHGs to CO_2.

Table 3.7-4 summarizes the modeled project-generated, operation-related emissions of CO_2e. Based on the modeling conducted, operation-related activities would result in a net increase of approximately 958 metric tons per year of CO_2e (MT/y CO_2e). Project-generated emissions of CO_2e were modeled based on project specifications defined in Impact 3.7-1 above. Appendix H shows the detailed modeling input parameters and results.

As discussed previously, neither ARB nor NSCAPCD has adopted a significance threshold for analyzing GHG emissions generated by a proposed project or a methodology for analyzing air quality impacts related to global warming. However, the BAAQMD has proposed a CEQA threshold of significance for GHG emissions of 1,100 MT/y CO2e (BAAQMD 2009). If this threshold is adopted by BAAQMD and the NSCAPCD and rendered applicable to the project, the proposed project's GHG emissions would be below the relevant threshold, and result in a less than significant impact.

In addition, as discussed in the Project Description, the project is specifically intended to reduce cumulative truck trips by providing a local source of PCC aggregate that would otherwise come from more distant sources by barge and truck, and would therefore reduce longer haul truck travel distances and associated air emissions, including GHGs. As a result, the proposed project would likely reduce GHG emissions as compared to the No Project Alternative or a reduced project alternative, and would help rather than hinder the state's goal of reducing GHG emissions by 2020.

Mitigation Measures

3.7-5 Syar shall implement the following measures to reduce CO_2e emissions:

- Ensure that all heavy duty equipment is properly tuned and maintained before and during on-site operation.
- Use low-sulfur fuel for on-site heavy duty equipment.
- When replacing or upgrading equipment, purchase the most economically viable alternative fueled or lower polluting machines.
- Turn off diesel equipment standing idle for more than 5 minutes.
- Install temporary electrical service whenever possible to avoid need for independently powered equipment (e.g., compressors).
- Monitor the efforts of ARB, CEC, and any other State agency charged with reducing California's contribution to global climate change. Implement all applicable control measures adopted by any state agency through promulgated regulations.
- Prior to commencing operations, submit a Greenhouse Gas Reduction Plan incorporating the above measures and any other reasonably feasible measures to reduce greenhouse gas emissions by 25% consistent with County General Plan policies.

Implementation of Mitigation Measure 3.7-5 would further reduce the project's GHG emissions.

3.8 AESTHETICS

A. Setting

REGIONAL SETTING

The northwest-trending Alexander Valley is located in northern Sonoma County, within the Coast Ranges and west of the Mayacamas Mountains. The project study area is located entirely within the valley floor, which ranges from approximately 1–4 miles in width. Nearby towns and cities include Geyserville, which is one-half mile west of the Russian River and near the northern third of the study area, as well as Cloverdale (located 9 miles north of Geyserville) and Healdsburg (located 6 miles south of Geyserville). U.S. Highway 101 (U.S. 101) runs along the western edge of the valley through or adjacent to each of these communities. State Route (SR) 128 extends eastward from Geyserville, crossing the valley and continuing south through the study area.

The natural landscape in the surrounding hillsides consists mostly of oak woodlands and native and nonnative grasslands, appearing green and lush in the wet winter months and lighter in color and dry by late spring and through the fall season. Riparian vegetation, including mixed cottonwood trees and willow scrub of varying heights and densities, is present throughout the study area along the river's edge. Mostly agricultural land and scattered residential uses extend from the river to the base of the nearby mountains. Most of the valley's agricultural uses are dedicated to wine grape production. Vineyards dominate the landscape in views of the valley and contribute a seasonal change in color to the area's general visual character.

LOCAL SETTING

The study area is a 6.5-mile reach of the Russian River along the floor of the lower Alexander Valley. The riverbed itself is characterized by the series of gravel bars proposed to be mined as part of the project. The river winds its way alongside these bars, each of which is of substantial length and width relative to other nearby bars. There is some variety among the bars with regard to density of vegetation, coarseness of gravel, and degree of slope toward the river. However, each bar is defined primarily by large, relatively flat swaths of exposed aggregate rock and gravel, and it is these bars, along with the riparian vegetation, that identify the river's presence in views from throughout the surrounding area during the low-flow period. In winter, higher flows expand the area of open waterway and the bars are partly or wholly covered by water. The high flows are generally of short duration and the river level drops after high-flow events, exposing the bars. Thus, the visual appearance of the individual bars, as well as the entire river bed, changes with time, depending on river flow.

Individual gravel bars along the riverbed are often obscured by the riparian vegetation, and views from points throughout the study area and the lower Alexander Valley are limited. The mostly low elevations of the two major roads in the area (U.S. 101 and SR 128) provide for only intermittent views of the riverbed, most notably from the elevated southbound segment of U.S. 101 as it passes Geyserville. Views from SR 128, where it increases slightly in elevation as it crosses the river along the Geyserville Bridge, allow for the most close-range, unobstructed views of the riverbed from any of the nearby major roadways. Similarly, other, more distant views of the study area are only intermittently available from the roads that extend into the hills to the east. Hillside views in which the study area would be most prominent are the private, unobstructed views from homes and from the River Rock Casino.

Figure 3.8-1 presents the view of Bar S-9 from the west end of the Geyserville Bridge. The photograph in Figure 3.8-2, taken from the parking structure of the River Rock Casino, depicts a private view; it is included in this chapter to illustrate the unobstructed, expansive views of the study area that may be available from the hills to the east.

Typical viewers of the riverbed from public viewpoints consist mostly of drivers traveling through or alongside the study area. The primary viewers of the riverbed are:

- residents and workers in the immediate area;
- travelers along southbound U.S. 101 to the west;
- tourists traveling along SR 128;
- recreationists viewing the site from watercraft within the river; and
- visitors en route to the River Rock Casino.

B. Regulatory Framework

STATE REGULATORY ISSUES

The California Scenic Highway Program was created by the California Legislature in 1963. Its purpose is to preserve and protect scenic highways from change that would diminish the aesthetic value of lands adjacent to highways.

There are no state-designated Scenic Highways within or adjacent to the study area.

LOCAL REGULATORY ISSUES

Sonoma County General Plan

Sonoma County addresses scenic resources in the Open Space Element of the *Sonoma County General Plan* (County General Plan) (PRMD 1998). The Open Space Element (General Plan Part 4.2) includes policies for scenic landscape units, community separators, and scenic corridors. The project area is designated as either a Scenic Landscape Unit or a Scenic Corridor. Each is described below, first in general terms and then as applied to the project and study area.

It should first be noted that the County's protective measures for scenic corridors rely on County zoning regulations to control the visual impact of development, primarily through the use of the Scenic Resources (SR) overlay zoning district, as well as through the design review process. For Scenic Corridors the SR overlay district establishes a setback of 30% of the lot depth up to a maximum of 200 feet from the centerline of the road. Within this area, development is prohibited, with certain exceptions. For Scenic Landscape Units the SR overlay district requires design review for all development that is not agricultural in nature. The Design Review process establishes procedures for review by PRMD staff or an appointed design review committee to assure that it meets certain standards. References to General Plan Scenic Resources policies are discussed below.

Source: AECOM

Figure 3.8-1
View of Bar S-9 from western end of Pedestrian Path on Geyserville Bridge

Source: AECOM

Figure 3.8-2
View of Study Area from Hills to the East

Scenic Landscape Units

Specific landscapes are identified as being of special importance to Sonoma County with regard to scenic resources. Their preservation is of further importance to the quality of life of county residents, recreationists, tourists, and the related economy. According to the County General Plan, maintaining the openness of these areas provides important visual relief from urban densities.

The study area is within the Alexander and Dry Creek Valleys Scenic Landscape Unit. The scenic beauty is identified by the County General Plan as being important from an aesthetic standpoint and an economic one, as agricultural marketing is closely tied with the area's scenic image. The hills along U.S. 101 and above the valley floor are particularly sensitive.

The following Scenic Landscape Unit goals, objectives, and policies would apply to the project:

Goal OS-2: Retain the largely open, scenic character of important Scenic Landscape Units.

Objective OS-2.1: Retain a rural, scenic character in Scenic Landscape Units with very low intensities of development. Avoid their inclusion within spheres of influence for public service providers.

Policy OS-2b: Avoid commercial or industrial uses in Scenic Landscape Units other than those which are permitted by the agricultural or resource land use categories.

Policy OS-2d: Apply the Scenic Resources Combining District consistent with this element to all lands located within Scenic Landscape Units.

Policy OS-2g: Identify critical scenic areas within designated Scenic Landscape Units. To the extent allowed by law, consider requiring dedication of a permanent scenic or agricultural easement at the time of subdivision for properties within these critical scenic areas.

Policy OS-2i: For development on parcels located both within Scenic Landscape Units and adjacent to Scenic Corridors, apply the more restrictive siting and setback policies to preserve visual quality.

Scenic Corridors

Preservation of the local landscape as viewed from rural roadways is identified in the County General Plan as being important to the character of Sonoma County. Both U.S. 101 and SR 128 are identified by the County as scenic corridors where they pass through the study area. The following County General Plan goals, objectives, and policies would therefore apply to the project:

Goal OS-3: Identify and preserve roadside landscapes which have a high visual quality as they contribute to the living environment of local residents and to the county's tourism economy.

Objective OS-3.1: Designate the Scenic Corridors on Figures OS-5a through OS-5i along roadways which cross highly scenic areas, provide visual links to major recreation areas, give access to historic areas, or serve as scenic entranceways to cities.

Objective OS-3.2: Provide guidelines so future land uses, development and roadway construction are compatible with the preservation of scenic values along designated scenic highway corridors.

Policy OS-3a: Apply the Scenic Resources Combining District to those portions of properties within Scenic Corridor setbacks.

SONOMA COUNTY SURFACE MINING AND RECLAMATION ORDINANCE

The Sonoma County Surface Mining and Reclamation Ordinance (SMARO) requires that provisions shall be made where practical for buffering, berming, and visual screening between the operation and an adjacent public street right-of-way, and public uses such as schools, parks, golf courses, and other such public uses determined to be visually sensitive by the County. Special provisions for screening may be required for operations in designated scenic areas or within 300 feet of a designated scenic corridor. The height and type of such screening shall be set by the permit.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including but not limited to trees, rock outcroppings and historic buildings within a state scenic highway;
- substantially degrade the existing visual character or quality of site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

In addition, based on PRMD Visual Assessment Guidelines, a project would have a significant impact on aesthetics if it would:

- be in conflict with a designated community separator, scenic landscape unit, or scenic corridor.

This evaluation of visual resources incorporates the PRMD *Visual Assessment Guidelines* (PRMD n.d.). The degree of activity proposed by the project, for which no permanent structures would be built, does not require that visual simulations or any other sort of photographic analysis be prepared; however, this evaluation still characterizes the site's sensitivity and the project's potential visual dominance.

PROJECT IMPACTS

Findings in the ARM Plan PEIR

Section 8.13, "Aesthetics," of the aggregate resource management plan (ARM Plan) PEIR determined that instream operations can result in significant visual impacts where they are clearly visible to passersby in scenic corridors and landscape units. The ARM Plan PEIR concluded that the potential impact would be mitigated by the ARM Plan's setbacks and location limitations, and that additional mitigation would be possible at some sites with vegetation and berms. However, the EIR determined that impacts would remain significant and unavoidable in a few locations, particularly where several operations are located in close proximity. It also determined that gravel mining sites would create the appearance of industrial operations in an otherwise rural setting, resulting in significant and unavoidable impacts.

Project Impacts

As described in Chapter 1, "Introduction and Project Description," the project would not result in the construction of any permanent structures within the study area. Mobile equipment utilized by the project would include heavy vehicles, including front-end loaders, bulldozers, water trucks, motor graders, aggregate haulers, a fuel and lube truck, and haul trucks. With the exception of the fuel and lube truck and haul trucks, this equipment would be present on the proposed gravel bars (up to two bars at one time) while in operation. The fuel and lube truck would be located on the terraces adjacent to the gravel bars, as fueling is prohibited below top of bank. Haul trucks would travel between the mining site(s) and the aggregate processing plant. Syar would stage unused extraction and loading equipment and worker vehicles on a terrace above the gravel bars, including during the weekends. Haul trucks would be parked at the Healdsburg processing plant and office at the end of each day and driven out to the site at the beginning of each day. In addition, a crane would be present during construction of the temporary bridges, which would be erected to access sites that are not directly accessible via private roads. These railroad flatcar bridges (or equivalent structures) would be supported by fill, consisting of clean, washed gravel on either side of the channel above the natural grade, to form an abutment and would be the only immobile structures for the project that would be present in the project area throughout the mining season. These bridges would be removed from the bars by October 15 of each year, using a crane.

Mining operations and river enhancement plan (REP) measures would be conducted during daylight hours only and no night lighting would be used; therefore, there would be no impact from night lighting. Further, the project's only immobile structures—the temporary flatcar bridges described above—would not be expected to be the source of any glare. As such, the project does not have the potential to affect a community separator or state scenic highway, or to be a source of substantial light, including night lighting, or glare.

The analysis of visual impacts focuses on potential conflicts with a scenic landscape unit and/or with scenic corridors; the project's potential to degrade the existing visual character or quality of site, outside of a scenic landscape unit and/or scenic corridor; and the project's potential to have a substantial adverse effect on a scenic vista. This analysis incorporates the PRMD Visual Assessment Guidelines as appropriate.

Impact 3.8-1 The project would result in a substantial impact on scenic landscape units or scenic corridors.

Based on the PRMD Visual Assessment Guidelines, the study area has a sensitivity rating of "high" because of its designation as a scenic landscape unit and its inclusion of a scenic corridor. The PRMD guidelines characterize the visual sensitivity of a site as "high" if any portion of the site lies within a land use or zoning designation protecting scenic or natural resources, including the scenic landscape unit or scenic corridor. Such site vicinities are generally characterized by the natural setting and form a scenic backdrop for the community or scenic corridor. Included in this category are building and construction areas within the Scenic Resources Combining District (SR) designation located on prominent hilltops, visible slopes less than 40%, or areas where important natural features of aesthetic value are visible from public roads or public-use areas.

The project could affect the scenic landscape unit and scenic corridor in two ways: from the manner in which mining and REP activities would occur (i.e., the presence of construction equipment, as well as the duration of construction and presence of temporary structures); and in terms of permanent alterations to the physical landscape upon completion of mining and REP activities. The intensity of impacts is determined in this analysis based on the expected visual dominance of mining and REP activities relative to the existing landscape.

The visual dominance of a proposed project is determined under the PRMD guidelines by comparing the elements or characteristics of the project with its surroundings and giving a rating of inevident, subordinate, co-dominant, or dominant:

- *Form*: Shape, geometry, complexity
- *Line*: The edge of the shape, boldness, complexity of silhouette, orientation
- *Color*: Reflectivity, hue (actual color), value (dark or light)
- *Texture*: Surface characteristics, randomness, grain (fine or coarse)
- *Night Lighting* (As previously noted, because construction and mining activity would occur during daylight hours, there would be no night lighting resulting from the project)

Visual dominance ratings are defined as follows:

- *Dominant:* Project elements are strong—they stand out against the setting and attract attention away from the surrounding landscape. Form, line, color, texture, and night lighting contrast with existing elements in the surrounding landscape.
- *Co-Dominant:* Project elements are moderate—they can be prominent within the setting, but attract attention equally with other landscape features. Form, line, color, texture, and night lighting are compatible with their surroundings.
- *Subordinate:* The project is minimally visible from public view. Element contrasts are weak—they can be seen but do not attract attention. The project generally repeats the form, line, color, texture, and night lighting of its surroundings.
- *Inevident:* The project is generally not visible from public view because of intervening natural land forms or vegetation.

In an area of high sensitivity, visual dominance ratings of dominant or co-dominant are considered to result in significant impacts.

Table 3.8-1 below assigns visual dominance ratings to project characteristics with regard to mining activity, permanent landscape alterations, and intensity of impact. Following the table is a discussion of temporary and permanent impacts on scenic landscape units and scenic corridors.

Temporary Impacts

The proposed mining would be limited to no more than four instream bars during any one season (June 1 to November 1), as detailed in Chapter 1. Mining is expected to occur at one mining site at a time through the operating season (up to 5 months). Mining equipment, including access bridges and the cranes required to install them, would have a temporary presence in the visual landscape at the mining site(s); at the end of the season, all equipment and temporary structures would be removed from the instream bar(s) entirely. During mining activity, the visual dominance of such equipment would depend on the proximity of the activity to areas allowing high visibility, as well as the duration of views; a range of visual dominance would result depending on the viewer group, as described below.

Table 3.8-1
Visual Dominance of the Project, by Characteristic

Characteristic	Visual Dominance		
	Mining Activity (Temporary)	Landscape Alterations (Permanent)	Intensity of Impact
Form	Dominant	Subordinate	Significant
Line	Dominant	Subordinate	Significant
Color	Dominant	Subordinate	Significant
Texture	Dominant	Subordinate	Significant

Source: Data compiled by AECOM in 2009

Views from Roadways—Drivers, Bicycle Riders, and Pedestrian Viewer Group

Mining and REP activities would be generally inevident, as views of the riverbed are intermittent throughout the study area and unobstructed views are available only from SR 128/Geyserville Bridge (which includes a separate pedestrian walkway on the north side), a segment of southbound U.S. 101 and occasional locations in the eastern hills.

More distant views from U.S. 101 and the hills would allow for the visibility of mining and REP activities, but contrasts in form (the shape of the equipment), line (access bridges), color (of the equipment, presumably bright yellow and/or metallic), and texture (bulky industrial features in an otherwise natural setting characterized by foliage, riverbed gravel, and water) would be subordinate in prominence to the existing surroundings.

From closer views (namely those available to drivers, bicycle riders, and pedestrians on Geyserville Bridge during times when Bars S-8 and/or S-9 are being mined and oxbow construction at Bar S-7), mining and REP activities would be co-dominant with the existing landscape. The presence of large vehicles and access bridges would constitute a contrast in form, line, color, and texture that would be noticeable within the setting. In particular, temporary bridges installed across the Russian River would introduce linear, constructed features into the landscape and place them directly over the winding waterway.

It should be noted that the duration of views depends on the viewer's speed of travel. Views from U.S. 101, where vehicles typically travel at high rates of speed, are short in duration, while views from points along SR 128, including Geyserville Bridge, tend be longer in duration because of the lower speed limit for vehicles and the greater presence of pedestrians and bicycle riders. Therefore, views of mining activity from vehicles, including bicycles, would be short in duration. If Bars S-7, S-8, and S-9 were mined consecutively, mining equipment and activities would be visible from the Geyserville Bridge for, at most, three consecutive mining seasons if maximum aggregate extraction volume would occur at these sites as shown in Table 1-1 in Chapter 1, "Introduction and Project Description."

Views from the River—Boat Viewer Group

Existing views from the stretch of the river within the study area include occasional structures, roads, and other evidence of human activity, but the area is generally characterized by its natural state, with the riparian vegetation along the edges blocking most views of development beyond the river's vicinity. The exception to this is the area near SR 128/Geyserville Bridge, where gravel Bars S-8 and S-9 are visible to the south and north, respectively. Here, existing development—including roads, the bridge, structures, and agricultural production—is clearly visible from within the riverbed.

In views from the river, mining and REP operations would have the potential to be dominant. In most cases, only the temporary bridges and equipment (rather than the excavation pits) would be visible to the viewer, because the buffers proposed by the mining technique (e.g., horseshoe, alcove, and oxbow skims) would typically shield boaters' view of the excavation pits as boaters proceed downstream along the river. Construction of the oxbows and alcoves as part of the REP would be shielded from boaters' view because of their locations behind the bars. However, excavation pits resulting from the benching of the riverbanks would be visible to river users. At times when mining and REP activities would be under way at bars other than those near the bridge, the presence of large mining equipment and access bridges would contrast with the natural environment. This contrast would be exacerbated by the probability that boaters would be seeing such equipment after a longer period of viewing a predominantly natural, and mostly undeveloped, environment. As such, the mining activity would be visually dominant to viewers as they passed the bar or bars where the activity would be taking place.

Nevertheless, the duration of boaters' views would be short relative to the entire stretch of the river within the study area because no more than four bars would be mined in any particular season during the life span of the project, and mining locations would generally shift from year to year. As such, in the vicinity of the Geyserville Bridge, the potential for unobstructed views of mining activity from points within the river would vary in frequency, with activity likely to be inevident from most locations within the study area.

Permanent Impacts

The mined area would be reclaimed before and during mining activities such that it would not contrast substantially with the riverbed's existing overall form, line, color, or texture. Reclamation measures are described in greater detail in Chapter 1. For the horseshoe, oxbow, and alcove skimming methods, riparian vegetation would be removed from no more than the lower two-thirds of instream bars, and would be transplanted to the high banks and the head of the gravel bar. Buffers would also be maintained along the outside of the gravel bars, adjacent to the low-flow channel. These plantings would maintain the visual landscape's texture, which is defined partly by foliage, and its color, reinforcing the presence of mostly green vegetation. A buffer would be maintained at the upper one-third and high bank (based on summer low-flow volumes). The slope of the skimming (mining) would generally match the gradient of the river. Although the exact form of the riverbed before skimming could not be replicated, these measures would ensure that, after skimming, the form and orientation of the area would be maintained. Taking into consideration that the visual appearance of the bars shifts over time, such measures would essentially repeat the form, line, color, and texture of its surroundings, and the visual dominance of the reclaimed areas would be considered subordinate.

Riverbank benching methods would involve removal of invasive species and the floodplain adjacent to the channel to a depth below bankfull elevation. The skimmed floor would be revegetated after extraction activities. The skimmed floor would have a downstream gradient matching that of the river. The form, line, color, and texture of the skimmed area would be altered immediately after extraction activities, as the area would be lower in elevation and denuded of vegetation. However, over time as vegetation is reestablished, the form, line, color, and texture of the area would be reestablished.

In addition to the reclamation, implementation of the REP would consist of construction of oxbows and alcoves as part of the project. Two oxbows would be constructed adjacent to Bar S-13 and one on the west bank opposite Bar S-7. Alcoves are proposed at the mouth of each of the eastern tributaries in the project reach (i.e., Gill, Miller, and Rancheria Creeks). Oxbow construction methods would involve clearing and grubbing operations, removal of invasive species, and excavation. Excavation of the alcoves would be performed from adjacent gravel bars (Bars S-14, S-6, and SD-5 for Gill, Miller, and Rancheria Creeks, respectively). The alcoves would ultimately be connected to the live flow of the Russian River. The form, line, color, and texture of these enhancement areas would be altered after initial construction. These enhancement projects would not be implemented simultaneously, but rather in conjunction with nearby bar skimming operations. The oxbow and alcove areas would be revegetated. Once vegetation is reestablished, it would repeat the form, line, color, and texture of the area and the visual dominance of the enhancement projects would be considered subordinate.

Impact 3.8-1 Conclusion

In summary, under the PRMD guidelines, the significance of impacts is determined by comparing the visual dominance of a proposed project with the sensitivity of the existing landscape. The project would be within an area of high sensitivity because it would take place in an area that includes a scenic landscape unit and scenic corridors, As described above, the project would be visually dominant only during the period of mining activity (up to 5 months per season if mining occurs at one site at a time, or on rare occasions, up to two sites simultaneously for up to 50 days), and then would only be dominant in limited, close-in views of the activity from the river.

In other views from nearby roads, mining activity would range from being co-dominant to subordinate, and in long-distance views, it would mostly be inevident. Upon completion of mining activity and reclamation, there would be no permanent contrasts. Although on balance, the project would be inevident or subordinate to most viewer groups most of the time, it would remain dominant at times for boaters and co-dominant to viewers on Geyserville Bridge during mining and REP activities. Therefore, impacts on scenic landscape units and scenic corridors would be significant, although temporary. Mitigation measures such as screening for operations to reduce impacts on scenic landscape units and scenic corridors to less-than-significant levels are not feasible. Under SMARO, special provisions for screening may be required by the County. However, the placement of screening may be a visual barrier that obstructs the expansive view of the river, such that it would contrast substantially with the riverbed's existing overall form, line, color or texture; the screening would be considered more obtrusive to the visual landscape and as such is not proposed as a mitigation measure.

Mitigation Measures

None

Impact Significance After Mitigation

Although temporary and limited, the impact on scenic landscape units and scenic corridors would be significant and unavoidable during mining and REP activities.

Impact 3.8-2 The project would not result in a substantial impact on a scenic vista.

A scenic vista is typically a focused and sustained view in which important visual resources are clearly visible. The County General Plan's discussion of scenic resources in the Alexander Valley focuses on the vineyards and surrounding hills. However, for purposes of this analysis, a scenic vista includes a view in which either all or a prominent portion of the study area—the riparian area along the floor of the Alexander Valley—is visible. Because most views of the study area are limited to locations where either nearby or riparian vegetation obstructs the riverbed, only two scenic vistas were identified for the project: from Geyserville Bridge (SR 128) and from the hillside to the east of the study area. Geysers Road is a County road located in the general area. It begins approximately 1 mile southeast of River Rock Casino. Geysers Road extends around the Alexander Valley and connects to Cloverdale to the north. The hills of the Alexander Valley obstruct views from Geysers Road to the study area. Although public views from the hillside are limited in number, the most direct view of the study area is from the privately owned River Rock Casino. CEQA considers impacts on scenic vistas from public roadways and properties; therefore, views from the privately owned casino's parking structure are included in this analysis as illustrative of general views from the hillside.

As noted previously, the segment of SR 128 that traverses the Russian River via Geyserville Bridge affords views of gravel Bar S-9 (to the north—see Figure 3.8-1) and Bar S-8 (to the south—see Figure 3.8-3). The bridge is the only point within the study area from which relatively expansive views of the riparian area are available from a public road. (Jimtown Bridge, which is located at the southern end of the study area where Alexander Valley Road traverses the river, affords only limited views of the river bed, none of which includes gravel bars proposed to be mined.)

Even the existing views from this vantage point (Geyserville Bridge) are limited in duration. The bridge is located at a slightly higher elevation than the immediately surrounding land, and riparian vegetation is present along the outer areas of the river bed. As previously noted, views of the riverbed are therefore limited to drivers and pedestrians who are on either the bridge or its approaches, which are immediately adjacent in either direction along the roadway. Figure 3.8-4 demonstrates the reduced visibility of the riverbed from the eastbound approach.

From Geyserville Bridge, mining activity would be clearly visible to drivers or pedestrians. However, the permit would allow mining of no more than four gravel bars identified for mining within any given season, and would avoid skimming of adjacent bars immediately upstream or downstream in consecutive seasons to the extent possible. Although it is possible that views of mining areas from Geyserville Bridge would be limited to one direction (north or south) at a time, it should be noted that based on the known volume of aggregate available for mining (see Table 1-1 in Chapter 1), Bars S-8 and S-9 could be mined over three seasons and mining activity would therefore potentially be visible over 3 years. Mining equipment would be visible during seasons in which either Bar S-8 or S-9 is mined, but would be present only temporarily and would be completely removed at the end of the season.

As previously noted, the SMARO requires practical measures "for buffering, berming, and visual screening between the operation and an adjacent public street right-of-way, public uses such as schools, parks, golf courses, and other such public uses determined to be visually sensitive by the county. Special provisions for screening may be required for operations in designated scenic areas or within three hundred feet (300') of a designated Scenic Corridor." The segment of SR 128 that crosses the Russian River via Geyserville Bridge is a designated scenic corridor.

Source: AECOM

Figure 3.8-3
View of Bar S-8 from Eastbound Lane of Geyserville Bridge

Source: EDAW

Figure 3.8-4
View of Bar S-9 from Eastbound SR 128 (Western Approach to Geyserville Bridge)

Bar S-9, north of the bridge, would not be mined within 300 feet of the roadway, but mining activity on Bar S-8, south of the bridge, would occur within 300 feet of the scenic corridor. All mining and REP activities would be temporary in nature (no permanent structures would be built) and visible for only a limited duration from the roadway, and the project's presence within 300 feet of a scenic corridor would not cause a significant impact on a scenic vista, with the exception of mining activities at Bar S-8. Mining activities at Bar S-8 would occur within 300 feet of the scenic corridor (visible to viewers on Geyserville Bridge) would therefore represent a significant but temporary impact on a scenic vista. However, under SMARO, special provisions for screening may be required by the County. The placement of screening may be a visual barrier that obstructs the expansive view of the river, such that it would contrast substantially with the riverbed's existing overall form, line, color, or texture; the screening would be considered more obtrusive to the visual landscape, and as such is not proposed as a mitigation measure.

Expansive views of the lower Alexander Valley are available sporadically throughout the hills to the east of the study area. As previously described, the most unobstructed views of the study area from the hills are private views, and Figure 3.8-2 is included in this analysis only to illustrate such vistas. In the most expansive views from the hills, the study area (Bars S-4 and S-5 in this view) is visible within a larger landscape that includes residences, agricultural facilities, and other buildings that are visible throughout the valley. In such views, equipment associated with mining activity, including vehicles and temporary bridges, at either Bar S-4 or Bar S-5 would be at least partially visible. In addition, access roads that are installed or altered to allow for mining equipment and vehicles would likely be more prominent from this vantage point, accentuating an already existing linear form in the visual landscape.

However, mining activity in general would be inevident or subordinate to the larger landscape, which includes vineyards and the hills opposite the valley, all of which are prominent in views from the casino. Alterations to the riverbed after skimming and the REP would be inevident in views throughout the eastern hills.

Because of the duration and proximity of views, along with the lack of dominance posed by mining activities relative to the larger landscape, impacts on potential public scenic vistas from the project would be considered less than significant.

Mitigation Measures

None

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3.9 NOISE

This section includes a description of ambient noise conditions, a summary of applicable regulations related to noise and vibration, and an analysis of potential short-term construction and long-term operational noise impacts of the project. Mitigation measures are recommended, as necessary, to reduce significant noise impacts.

A Setting

ACOUSTIC FUNDAMENTALS

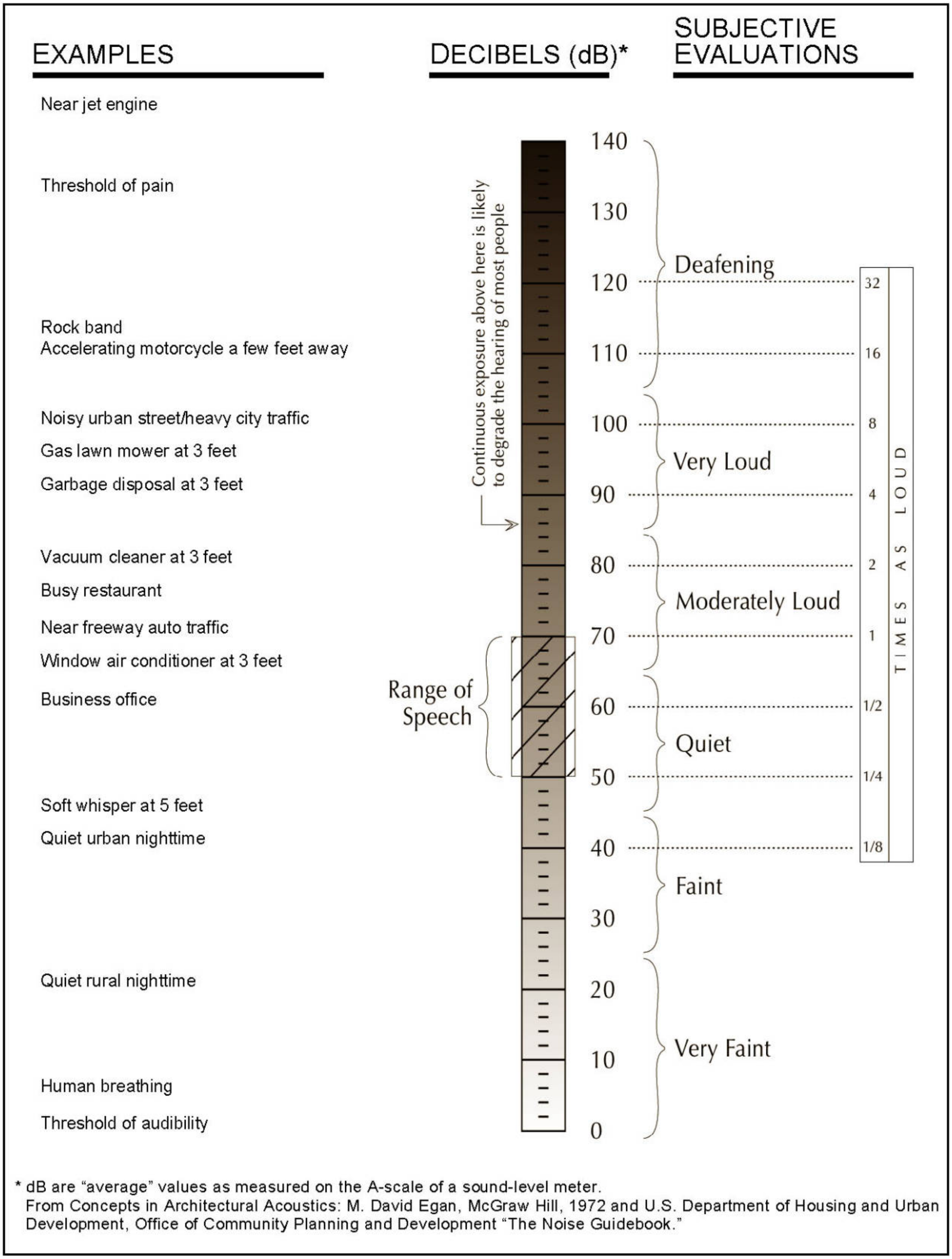
Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as noise; consequently, the perception of sound is subjective in nature, and can vary substantially from person to person. Common sources of environmental noise and noise levels are presented in Figure 3.9-1.

A sound wave is initiated in a medium by a vibrating object (e.g., vocal chords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in Hertz.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and have a more useable numbering system, the decibel (dB) scale was introduced. A sound level expressed in decibels is the logarithmic ratio of two like pressure quantities, with one pressure quantity being a reference sound pressure. For sound pressure in air, the standard reference quantity is generally considered to be 20 micropascals, which directly corresponds to the threshold of human hearing. The use of the decibel is a convenient way to handle the million-fold range of sound pressures to which the human ear is sensitive. A decibel is logarithmic; it does not follow normal algebraic methods and cannot be directly added.

For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a hundredfold increase in acoustical energy.

The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. The human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. The standard weighting networks are identified as A–E. There is a strong correlation between the way humans perceive sound and A-weighted sound levels (dBA). For this reason the dBA can be used to predict community response to noise from the environment, including noise from transportation and stationary sources.



Source: Data compiled by AECOM in 2008

Figure 3.9-1: Common Noise Sources and Levels

Noise can be generated by mobile sources (transportation noise sources) such as automobiles, trucks, and airplanes and by stationary sources (nontransportation noise sources) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (decrease) depending on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers (walls, building facades, berms). Noise generated from mobile sources generally attenuate at a rate of 4.5 dB per doubling of distance (dB/DD). Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6.0 to 7.5 dB/DD.

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic features, and intervening building facades) between the source and the receptor can provide significant attenuation of noise levels at the receiver. The amount of noise level reduction or "shielding" provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural barriers such as berms, hills, or dense woods, and human-made features such as buildings and walls may be used as noise barriers.

NOISE DESCRIPTORS

The intensity of environmental noise fluctuates over time, and several different descriptors of time-averaged noise levels are used. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment. The noise descriptors most often used to describe environmental noise are defined below:

- *L_{max} (Maximum Noise Level):* The highest A/B/C–weighted integrated noise level occurring during a specific period of time.
- *L_{min} (Minimum Noise Level):* The lowest A/B/C–weighted integrated noise level during a specific period of time.
- *Peak:* The highest weighted or unweighted instantaneous peak-to-peak value occurring during a measurement period.
- *L_n (Statistical Descriptor):* The noise level exceeded n% of a specific period of time, generally accepted as an hourly statistic. An L_{10} would be the noise level exceeded 10% of the measurement period.
- *L_{eq} (Equivalent Noise Level):* The energy mean (average) noise level. The steady-state sound level which, in a specified period of time contains the same acoustical energy as a varying sound level over the same time period.
- *L_{dn} (Day-Night Noise Level):* The 24-hour L_{eq} with a 10-dB "penalty" applied during nighttime noise-sensitive hours, 10:00 p.m. through 7:00 a.m. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.
- *CNEL (Community Noise Equivalent Level):* A noise level similar to the L_{dn} described above, but with an additional 5-dB "penalty" for the noise-sensitive hours between 7:00 p.m. to 10:00 p.m., which are typically reserved for relaxation, conversation, reading,

and television. If using the same 24-hour noise data, the CNEL is typically 0.5 dB higher than the L_{dn}.

- *SEL (Sound Exposure Level):* A description of the cumulative exposure to sound energy over a stated period of time.
- *SENEL (Single Event Noise Exposure Level):* An SEL where the measurement period is defined by the start and end times of a single noise event, such as an automobile pass by, aircraft flyover, or individual industrial operations.

EFFECTS OF NOISE ON HUMANS

Excessive and chronic exposure to elevated noise levels can result in auditory and nonauditory effects in humans. Auditory effects of noise on people are those relating to temporary or permanent hearing loss caused by loud noises. Nonauditory effects of exposure to elevated noise levels are those relating to behavioral and physiological effects. The nonauditory behavioral effects of noise on humans are associated primarily with the subjective effects of annoyance, nuisance, and dissatisfaction; which lead to interference with activities such as communications, sleep, and learning. The nonauditory physiological health effects of noise on humans have been the subject of considerable research efforts attempting to discover correlations between exposure to elevated noise levels and health problems, such as hypertension and cardiovascular disease. The mass of research infers that noise-related health issues are primarily the result of behavioral stressors and not a direct noise-induced response. The extent to which noise contributes to nonauditory health effects remains a subject of considerable research, with no definitive conclusions.

The degree to which noise results in annoyance and interference is highly subjective and may be influenced by several nonacoustic factors. The number and effect of these nonacoustic environmental and physical factors varies depending on individual characteristics of the noise environment such as sensitivity, level of activity, location, time of day, and length of exposure. One key aspect in the prediction of human response to new noise environments is the individual level of adaptation to an existing noise environment. The greater the change in the noise levels that are attributed to a new noise source, relative to the environment an individual has become accustom too, the less tolerable the new noise source will be viewed.

A change in sound level of 1 dB is generally not perceivable by humans, excluding controlled conditions and pure tones. Outside of controlled laboratory conditions, the average human ear barely perceives a change of 3 dB. A change of 5 dB generally fosters a noticeable change in human response, and an increase of 10 dB is subjectively heard as a doubling of loudness.

VIBRATION

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as operating factory machinery, or transient in nature, such as explosions. Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, and acceleration.

Vibration amplitudes are commonly expressed in peak-particle-velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings

(FTA 2006, Caltrans 2004). PPV and RMS vibration velocity are normally described in inches per second (in/sec).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. The response of the human body to vibration relates well to average vibration amplitude; therefore, vibration impacts on humans are evaluated in terms of RMS vibration velocity. Similar to airborne sound, vibration velocity can be expressed in decibel notation as vibration decibels (VdB). The logarithmic nature of the decibel serves to compress the broad range of numbers required to describe vibration.

Typical outdoor sources of perceptible groundborne vibration include construction equipment, steel-wheeled trains, and traffic on rough roads. Although the effects of vibration may be imperceptible at low levels, effects may result in detectable vibrations and slight damage to nearby structures at moderate and high levels, respectively. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in damage to structural components. The range of vibration important to the project occurs from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings (FTA 2006).

REGIONAL SETTING

The project is proposed within a 6.5-mile reach of the Russian River located in the lower Alexander Valley in Sonoma County, southeast of Gill Creek and northwest of the Jimtown Bridge. The noise environment in the Alexander Valley includes transportation and nontransportation noise sources. The major transportation noise sources are U.S. Highway 101 (U.S. 101), State Route (SR) 128, Geyserville Avenue, the Cloverdale Municipal Airport and the Northwestern Pacific Railroad (NCRA). There is currently no active rail service within the project limits, however, Sonoma Marin Area Transit (SMART) plans to open commuter rail service to Cloverdale in 2014 on the NCRA tracks, and NCRA would like to resume freight service within the timeframe for the project (Peltz, pers. comm., 2009) The major nontransportation noise sources include wineries, agricultural uses, and light industrial uses (e.g., automotive repair, cabinetry, wood processing, welding, and steel fabrication).

LOCAL SETTING

The noise environment within the project vicinity also includes transportation and nontransportation noise sources. Transportation noise sources include U.S. 101, SR 128, Sonoma County (County) roads, and farm roads. Nontransportation noise sources include agricultural uses and rural residential activities. Noise from surrounding operations (e.g., light industrial) in addition to noise from outdoor activities (e.g., people talking, dogs barking, operation of landscaping and agricultural equipment) also contributes, to a lesser extent, to the existing noise environment.

Existing Noise-Sensitive Receptors

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include schools, hospitals, convalescent facilities, parks, hotels, places of worship, libraries, and other uses where low interior noise levels are essential.

Noise-sensitive receptors in the study area include single-family residential dwellings, some of which are immediately adjacent to the haul routes. Figures 3.7-1 through 3.7-3 in Section 3.7, "Air Quality," show the general locations of existing noise-sensitive receptors with respect to the mining sites. Sensitive receptors also occur along the proposed haul routes, including private and public roadways. Figures 3.7-1 through 3.7-3 identify individual sensitive receptors located adjacent to the roadways. The distances of sensitive receptors vary along the roadways, most of which are located within approximately 100 feet of the centerline of the proposed haul routes.

Roadway Vehicle Traffic

As mentioned above, one of the dominant noise sources is vehicle traffic on area roadways. Existing vehicle traffic noise levels in the project area were modeled using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise Emission Levels (CALVENO) and traffic data obtained from the specific traffic report prepared for this project (see Section 3.6, "Traffic and Circulation"). The FHWA model is based on CALVENO reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, distance to the receiver, and ground attenuation factors. Truck usage and vehicle speeds on roadways in the study area were estimated from field observations and California Department of Transportation (Caltrans) data where available. Table 3.9-1 summarizes the CNEL noise levels at 100 feet from the centerline and distance from the roadway centerline to the 60-, 65-, and 70-dBA CNEL contours for existing average daily traffic (ADT) volumes.

Table 3.9-1
Summary of Modeled Existing Traffic Noise Levels

Roadway	Segment Location	CNEL (dBA) 100 Feet from Centerline of Roadway	Distance (feet) from Roadway Centerline to CNEL (dBA) Contour		
		Existing	70	65	60
Geyserville Avenue	Canyon Road	50.0	5	10	22
Geyserville Avenue	Hamilton Lane	56.1	12	26	55
Geyserville Avenue	Bill Ferguson Road	54.3	9	19	42
Healdsburg Avenue	Lytton Springs Road	54.5	9	20	43
Lytton Station Road	Healdsburg Avenue	54.6	9	20	43
Hassett Lane	Lytton Station Road	47.2[1]	3	6	14
SR 101	S. Healdsburg Avenue	72.8	153	331	712
SR 101	Lytton Springs Road	72.1	138	298	641
SR 101	South Geyserville Ave	71.7	130	279	602

Notes: CNEL = community noise equivalent level; dBA = A-weighted decibels; SR = State Route
[1]Assumed ADT based on ambient noise measurement and field observations to establish a baseline for future project traffic noise evaluation. Refer to Appendix J for modeling input assumptions and output results.
Source: Modeling conducted by EDAW in 2007

Ambient-Noise Level

An ambient-noise survey was conducted in the project vicinity between October 10 and October 11, 2007, to measure the existing noise levels at various locations within the study area. Short- and long-term (i.e., continuous) noise-level measurements were conducted in accordance with the American National Standards Institute (ANSI) acoustic standards at five locations using LDL Model 820 precision integrating sound-level meters. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure that the measurements would be accurate. The equipment used meets all pertinent specifications of ANSI for Type 1 sound-level meters (ANSI S1.4).

Noise measurement locations were based on the presence and proximity of receptors to roadways. Table 3.9-2 shows the L_{eq}, L_{50}, and L_{max} values for Sites 1 through 5 using both short and long-term measurements.

Table 3.9-2
Summary of Measured Ambient Noise Levels

Site	Location	Distance from Roadway Centerline (Feet)	Date/Time	Average Measured Hourly Noise Levels, dBA						
				24-hour L_{dn}	Daytime (7 a.m.–10 p.m.)			Nighttime (10 p.m.–7 a.m.)		
					L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
1	North of Healdsburg Avenue, southwest corner of existing residential side yard	65	10/10/07 – 10/11/07	63.2	60.7	55.6	80.5	55.3	50.6	72.6
2	South side of Alexander Valley Road, residential front yard (540 Alexander Valley Road)	75	10/10/07 – 10/11/07	66.1	63.9	55.4	80.2	58.2	45.4	77.6
3	East side of Geyserville Avenue and west of Hamilton Lane, residential front yard (20690 Geyserville Avenue)	90	10/10/07 – 10/11/07	63.4	57.1	54.8	77.9	52.3	45.1	72.0
4	West side of Hassett Lane, residential front yard	90	10/11/07 9:00 a.m.	NA	48.4	41.1	68.2	NA		
5	South side of Lytton Station Road, residential front yard	60	10/11/07 10:20 a.m.	NA	61.3	46.8	82.9	NA		

Notes: dBA = A-weighted decibels; L_{dn} = day-night average noise level; L_{eq} = the energy average noise level; L_{50} = the noise level exceeded 50% of a specific period of time, L_{max} = maximum noise level; NA = not applicable
Source: Data compiled by EDAW in 2007

Existing Groundborne Vibration

The dominant source of groundborne vibration in the study area is vehicular traffic on local and regional roadway network. Additional groundborne vibration is also attributable to heavy-truck passbys and seasonal agricultural operations. Representative traffic vibration levels generated by conservative groupings of heavy-truck passbys and vehicular traffic empirically do not exceed 2 millimeters per second PPV at distances greater than 5 meters (approximately 17 feet) (Caltrans 2002).

B. Regulatory Framework

Various private and public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise. Applicable standards and guidelines are discussed below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

The U.S. Environmental Protection Agency (EPA), Office of Noise Abatement and Control, was originally established to coordinate federal noise control activities. After inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health and welfare, and the environment. Administrators of EPA determined in 1981 that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in the rulings by EPA in prior years remain upheld by designated federal agencies, allowing more individualized control for specific issues by designated federal, state, and local government agencies.

To address the human response to groundborne vibration, the Federal Transit Administration (FTA) has guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines recommend 65 VdB, referenced to 1 microinch per second and based on the velocity amplitude for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities); 80 VdB for residential uses and buildings where people normally sleep; and 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices) (FTA 2006).

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

Title 24 of the California Code of Regulations

Title 24 of the California Code of Regulations establishes standards that govern interior noise levels that apply to all new multifamily residential units in California. These standards require that acoustical studies be performed before construction begins at building locations where the existing noise levels exceed 60 dB L_{dn}. Acoustical studies are required to establish mitigation measures that will limit maximum levels to 45 dB L_{dn} in any habitable room. Although no generally applicable interior noise standards are pertinent to all uses, many communities in California have adopted 45 dB L_{dn} as an upper limit for interior noise in all residential units.

LOCAL

Sonoma County General Plan

The Noise Element of the *Sonoma County General Plan* (County General Plan) contains policies designed to protect the citizens of Sonoma County from the harmful effects of exposure of excessive noise, and to confine the noise impacts from transportation facilities to the smallest feasible land areas and to assure that any development therein be compatible with the level of noise exposure. Infrequent single events such as passage of a train, truck, or airplane may interfere with adjacent uses even though the cumulative noise exposure is within acceptable limits. These events call for a single event noise standard. The potential for sleep disturbance is often the main concern in these cases. The Noise Element contains the following policies that relate to the project:

- **Policy NE-1a:** Designate areas within Sonoma County as noise impacted if they are exposed to existing or projected exterior noise levels exceeding 60 dB L_{dn}, 60 dB CNEL, or the performance standards of Table [3.9-3]).
- **Policy NE-1b:** Avoid noise sensitive land use development in noise impacted areas unless effective measures are included to reduce noise levels. For noise due to traffic on public roadways, railroads and airports, reduce exterior noise to 60 dB L_{dn} or less in outdoor activity areas and interior noise levels to 45 dB L_{dn} or less with windows and doors closed. Where it is not possible to meet this 60 dB L_{dn} standard using a practical application of the best available noise reduction technology, a maximum level of up to 65 dB L_{dn} may be allowed but interior noise level shall be maintained so as not to exceed 45 dB L_{dn}.
- **Policy NE-1c:** Control non transportation related noise from new projects. The total noise level resulting from new sources and ambient noise shall not exceed the standards in Table [3.9-3] as measured at the exterior property line of any affected residential land use.
    1) If the ambient noise level exceeds the standard in Table [3.9-3], adjust the standard to equal the ambient level.
    2) Reduce the applicable standards in Table [3.9-3] by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.
    3) Reduce the applicable standards in Table [3.9-3] by five decibels if they exceed the ambient level by 10 or more decibels.
- **Policy NE-1d:** Consider requiring an acoustical analysis prior to approval of any discretionary project involving a potentially significant new noise source or a noise sensitive land use in a noise impacted area. The analysis shall:
    1) be the responsibility of the applicant
    2) be prepared by a qualified acoustical consultant
    3) include noise measurements adequate to describe local conditions
    4) include estimated noise levels in terms of L_{dn} and or the standards of Table [3.9-3] for existing and projected future (20 years hence) conditions, with a comparison made to the adopted policies of the Noise Element

5) recommend measures to achieve compliance with this element. Where the noise source consists of intermittent single events, address the effects of maximum noise levels on sleep disturbance

6) include estimates of noise exposure after these measures have been implemented

Table 3.9-3 (Table NE-2 from 1989 General Plan)
Noise Level Performance Standards in the Sonoma County General Plan

Category	Maximum Exterior Noise Level Standards, dBA		
	Cumulative Duration of Noise Event in any 1-Hour Period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30–60 minutes	50	45
2	15–30 minutes	55	50
3	5–15 minutes	60	55
4	1–5 minutes	65	60
5	0–1 minutes	70	65

Note: dBA = A-weighted decibels

- **Policy NE-1m:** Consider requiring the monitoring of noise levels for discretionary projects to determine if noise levels are in compliance with required standards. The cost of monitoring shall be the responsibility of the applicant.
- **Policy NE-2b:** Encourage installation of sound barriers along roadways in non industrial urban areas where an exterior noise level of 65 dB L_{dn} or more is attained and residences or other noise sensitive uses exist.
- **Policy NE-2c:** Consider using truck routing, speed limits, signal timing and other traffic control measures to reduce impacts on noise sensitive uses.

Aggregate Resource Management Plan

The ARM Plan establishes noise thresholds for aggregate mining operations conducted in the County of Sonoma. New mining activities have the potential to increase ambient noise levels at noise sensitive receptors by adding heavy truck trips on local roadways and by the operation of stationary noise source mining equipment. Thresholds for transportation noise sources must comply with the Sonoma County General Plan Noise Element exterior noise standard of 60 dB L_{dn} or less in outdoor activity areas and interior noise levels standards of 45 dB L_{dn} or less with windows and doors closed. Significant impacts from any mining project may occur if related noise levels increase three decibels in areas adjacent to haul roads and are raised above the performance standards set forth in the General Plan Noise Element for sensitive receptors, or if net noise levels increase 3-dB in adjacent areas which are currently designated as noise impacted. Thresholds for operational noise sources must comply with Sonoma County General Plan Noise Element performance standards shown in Table 3.9-3.

Sonoma County Surface Mining and Reclamation Ordinance

Chapter 26A, "Surface Mining," of the Sonoma County Surface Mining and Reclamation Ordinance (SMARO)(Sonoma County 1975) includes the following provision:

> Sec. 26A-09-010. General Standards for mining permit and operations.
>
> (i) Noise Control. The maximum acceptable noise levels for all aggregate operations shall be as set forth in the noise element of the General Plan.
>
> More stringent noise standards may be required as permit conditions when particular local circumstances warrant additional protection of potentially affected areas. Any noise control measures prescribed as condition of a permit shall in no manner be interpreted as to preclude the application to the surface mining site of future noise control measures adopted by the county subsequent to the granting of the permit.
>
> (j) Hours of Operation. Unless otherwise provided by conditions of the permit, the permit granted hereunder shall authorize operations of mining, processing and related activities as follows:
>
> (1) Monday through Friday: 6:00 a.m. through 10:00 p.m.;
>
> (2) Saturday: 6:00 a.m. until 4:30 p.m. Instream operations conducted on Saturdays are limited to processing outside the ordinary high water mark;
>
> (3) Sunday and national holidays: no mining or processing unless authorized as a condition of the permit;
>
> (4) Exceptions to these time limitations may be authorized by the director upon written request of the operator in conjunction with special contracts or other circumstances which require unusual hours of operation;
>
> (5) In the event of emergencies involving catastrophe, or threat to public safety or property, these time limitations shall not apply;
>
> (6) These time limitations shall not apply to the normal activities relating to maintenance of stationary or mobile equipment and delivery of supplies.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would result in significant noise impacts if the project would:

- expose persons to or generate noise levels in excess of the following standards established in the local general plan or applicable standards of other agencies:
- expose persons to or generate excessive groundborne vibration ;
- result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

- result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or
- expose people residing or working in the study area to excessive aircraft-generated noise levels.

For the purposes of this EIR, and to remain consistent with noise standards contained in the Sonoma County General Plan and the ARM Plan, the following would constitute a significant impact:

- noise generated from the project's on-site sources (mining equipment) that exceeds the County's General Plan noise level performance standards (Table 3.9-3, Policy NE-1c); or
- noise generated from haul trucks on public roads between the mining sites and the processing plant that increases existing noise levels by 3 dBA in areas adjacent to public haul roads, and are raised above the performance standards set forth in the Sonoma County General Plan Noise Element (Policy NE1-b); or
- noise generated from haul trucks on private roads between the mining sites and the processing plant that increase existing noise levels by 3 dBA and above the performance standards set forth on the Sonoma County General Plan Noise Element (Policy NE-1c and Table 3.9-3).

Impacts Not Discussed Further in this EIR

The project includes a River Enhancement Plan (REP). Construction equipment would be used to enhance the mined areas, but these activities would be short term and would not be conducted in conjunction with mining activities. Traffic increases (maximum of 10 daily truck trips) required to complete the REP would be nominal and would not generate traffic noise impacts at sensitive receptors.

Two municipal airports operate in the vicinity of the study area. Cloverdale Municipal Airport is approximately 5.17 miles to the north and Healdsburg Municipal Airport is approximately 2.91 miles southwest of the study area. The project site is located outside the sphere of influence for both airports. As a result, the project would not expose people, residents, or employees in the study area to excessive aircraft-generated noise levels.

The project includes the use of a crane to construct and remove temporary bridges for access to construction areas. The crane would be used for one day to install the temporary bridges at the start of the mining season, and one day at the end of the season to remove the bridges. Construction noise associated with the short-term and temporary use of the crane would not be significant.

The project would require mitigation to reduce traffic related impacts including repairing and widening of the haul routes. These road improvement projects would be temporary and similar to regular maintenance of the roads within Sonoma County. The minor road improvements would be subject to an Encroachment Permit from the County. Encroachment permits include traffic control measures and hours restrictions as standards. Any minor noise created as a result of the minor improvements would be short term and construction-related, and would not result in significant noise impacts.

Methodology

This section includes an analysis of potential operational (long-term) noise impacts associated with the project. Data included in Chapter 1, "Introduction and Project Description," and obtained during on-site noise monitoring were used to determine potential locations of noise-sensitive receptors and potential noise-generating land uses near the project site. Noise-sensitive land uses and major noise sources were identified based on existing documentation (e.g., equipment noise levels and attenuation rates) and site reconnaissance data

Operational Source Noise

AECOM assessed potential long-term noise impacts from long-term mining by identifying sensitive receptors and their relative exposure (considering intervening building façades and distance). Operational noise generated by mining was predicted using the Federal Transit Noise and Vibration Impact Assessment methodology for construction noise prediction (FTA 2006:5-1 through 5-29, 10-1 through 10-12). Reference noise emissions levels and usage factors are based on the FHWA Roadway Construction Noise Model (FHWA 2006:3). Noise levels of specific construction equipment operated and resultant noise levels at sensitive receptor locations have been calculated. Mining equipment would likely include bulldozers, loaders, graders, cranes, and other miscellaneous pieces of equipment (Perry, pers. comm., 2007).

Transportation Source Noise

AECOM conducted traffic noise modeling based on worst-case, peak-hour traffic turning movements obtained from the traffic analysis for this project prepared by Dowling & Associates, Inc., as discussed in Section 3.6, "Traffic and Circulation." Peak hour turning movements were used to calculate roadway segment volumes for modeling input. The FHWA Highway Traffic Noise Prediction Model (FHWA RD 77-108) (FHWA 1978) was used to calculate the change in traffic noise levels along affected roadways, based on the trip distribution estimates and modeling condition. AECOM determined the project's contribution to the existing traffic noise levels along area roadways by comparing the predicted noise levels at a reference distance of 100 feet from the roadway centerline, with and without project-generated traffic for existing and cumulative conditions.

AECOM compared predicted noise levels with applicable standards to determine significance. Mitigation measures have been developed for significant and potentially significant noise impacts.

Groundborne vibration impacts were qualitatively assessed based on existing documentation (e.g., vibration levels produced by specific construction equipment operations) and the distance of sensitive receptors from the given source.

PROJECT IMPACTS

Impact 3.9-1 Project operations would expose sensitive receptors to noise from equipment used on-site.

Worst-case noise levels from on-site heavy-duty equipment during project operations at the proposed mining sites were also modeled based on the typical operations equipment noise levels (see Table 3.9-4); see Appendix J for the modeling methodology.

Table 3.9-4 Typical Equipment Noise Levels		
Type of Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[2]
Grader	85	0.48
Dozer	85	0.54
Front-End Loader	80	0.43
Water Truck	84	0.2

Notes:
L_{max} = maximum noise level
[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006
[2] Based on information provided by Syar Industries
Sources: FTA 2006

Table 3.9-6 summarizes the modeled project-generated on-site noise levels from heavy-duty mining equipment at the proposed mining sites relative to the locations of the nearest sensitive receptors (see Figures 3.7-1 through 3.7-3 in Section 3.7, "Air Quality"). Noise impacts were determined by comparing these modeling results with applicable County standards (see Table NE-2 of the General Plan [Sonoma County 1989] and standards in the ARM Plan PEIR). Hourly noise levels, maximum noise levels, and noise levels occurring for 10% of an hour were modeled. As shown in Table 3.9-3, not all of the County's nontransportation-noise-level threshold categories can be calculated for comparison of compliance. The L_{eq}, L_{10}, and L_{max} estimates were determined using the FHWA Roadway Construction Noise Model, and the remaining County non-transportation noise level thresholds would require field measurements of the proposed instream mining activity. An existing instream mining site was not available for actual noise measurements; thus, AECOM used the modeled noise levels to evaluate project impacts. The noise metrics used in Table 3.9-6 effectively account for the other noise metrics because under normal operating conditions instream mining noise levels would not exceed the other L_n metrics shown in Table 3.9-3.

As described in Chapter 1, "Introduction and Project Description," instream mining and reclamation activities may occur simultaneously, but the number and pieces of heavy construction equipment outlined in Table 3.9-4 would not increase because of simultaneous activities. It is assumed that similar noise levels for reclamation activities would be experienced at the nearest noise sensitive receptors, as shown in Table 3.9-5.

Based on modeling results (Table 3.9-5), worst-case project-generated noise levels from heavy-duty mining equipment (e.g., loaders, dozers, and graders) could exceed the County's daytime and nighttime performance standards of 50 and 45 dBA L_{eq}, the 60 and 55 dBA L_{10}, and the 70 and 65 dBA L_{max}, respectively, if operations were to occur near noise-sensitive receptors (see Table 3.9-5 for noise levels at the nearest sensitive receptors). Noise levels would exceed the daytime standard of 50 dBA L_{eq} (between 7 a.m. and 10 p.m.) at 10 sensitive receptors (the receptors nearest Bars S-9 and S-10). Noise levels would exceed the nighttime standard of 45 dBA L_{eq} (between 10 p.m. and 7 a.m.) at 14 sensitive receptors (the receptors nearest Bars SD-2, S-7, and S-8 through S-10). Based on modeling results (Table 3.9-5), worst-case project-generated noise levels from heavy-duty mining equipment would exceed the County's nighttime maximum noise level performance standards (65 dBA L_{max}) at one proposed mining site. Noise levels would exceed the nighttime standard of 65 dBA L_{max} (between 10 p.m. and 7 a.m.) at one sensitive receptor (the receptor nearest Bar S-10) if work were to occur prior to 7 a.m.

Table 3.9-5
Summary of Modeled Noise Levels Generated from Project Equipment

Receptor[1]	Proposed Bar	Distance to Receptor (feet)	Exterior		
			dBA L_{eq}	dBA L_{10}	dBA L_{max}
1	S-10	450	***61.7***	**58.7**	**65.4**
2	S-10	720	***56.4***	53.4	60.1
3	S-10	1,050	***52.2***	49.2	55.9
4	S-9	1,015	***52.6***	49.6	56.3
5	S-9	500	***60.5***	**57.5**	64.2
6	S-9	715	***56.5***	53.5	60.2
7	S-9	530	***59.8***	**56.8**	63.6
8	S-9	925	***53.6***	50.6	57.3
9	S-9	900	***53.9***	50.9	57.6
10	S-9	1,050	***52.2***	49.2	55.9
11	S-8	1,500	**48.2**	45.2	51.9
12	S-8	1,480	**48.4**	45.4	52.1
13	S-7	2,275	43.6	40.6	47.3
14	S-7	1800	**46.2**	43.2	49.9
15	S-7	1,950	**45.3**	42.3	49.0
16	S-6	2,700	41.6	38.6	45.4
17	S-5	2,300	43.4	40.4	47.2
18	S-4	2,080	44.6	41.6	48.3
19	S-4	2,000	45.0	42.0	48.7
20	SD-4	1,775	**46.3**	43.3	50.1
21	SD-4	3,560	38.6	35.6	42.3
22	SD-2	1,500	**48.2**	45.2	51.9
23	SD-2	2,265	43.6	40.6	47.3
24	SD-1	2,590	42.1	39.1	45.8
25	SD-1	2,600	42.1	39.1	45.8
Significance Threshold Daytime/Nighttime (Sonoma County General Plan maximum exterior noise level standard)			50/45	60/55	70/65

***Italics* = exceedance of the daytime threshold for the outdoor activity area**

Bold = exceedance of the nighttime threshold for the outdoor activity area

Notes: dBA = A-weighted decibels; L_{10} = the noise level exceeded 10% of the measurement period; L_{max} = maximum noise level

[1] Refer to Figures 3.7-1 through 3.7-3 in Section 3.7, "Air Quality," for locations of sensitive receptors.

[2] Modeled project-generated, mining-related noise levels include loaders, dozers, and graders as sources.

[3] Modeled levels account for reductions only from equipment properly maintained and equipped with noise control devices.

Refer to Appendix K for modeling input assumptions and output results.

Source: Modeling conducted by AECOM in 2010

The modeled noise levels shown in Table 3.9-5 are considered conservative, and actual noise levels experienced at noise-sensitive receptors would likely be lower because of changes in wind direction, shielding provided by the riverbank, and the duration of daily instream mining activities. In addition, it should be noted that ambient noise levels in the project vicinity are presumed to increase during seasonal agricultural activities utilizing heavy-duty agricultural equipment (e.g., tractors and sprayers). However, as stated above, the ARM Plan PEIR's and County's hourly and maximum noise-level performance standards are used to evaluate compliance of project-generated operational noise levels.

As stated above, noise levels from equipment used during project operations would exceed the County's performance standards for nontransportation sources at the noise-sensitive receptor locations stated above. As a result, this impact would be significant.

Mitigation Measure

3.9-1 **Implement Noise Abatement Measures for On-Site Equipment Use.** Syar shall implement noise abatement measures:

- Operation of heavy-duty equipment at Bars SD-2, S-7, and S-8 through S-10 shall be limited to the daytime hours, starting at 7:00 a.m.
- All heavy equipment shall be equipped with noise control devices (e.g., mufflers) in accordance with manufacturers' specifications.
- All heavy equipment shall be inspected periodically to ensure proper maintenance and presence of noise control devices (e.g., lubrication, non-leaking mufflers, and shrouding).
- Temporary noise blankets shall be used to shield the noise-sensitive receptors adjacent to Bars S-9 (Receptors 4-10) and S-10 (Receptors 1-3) if the above measures do not adequately reduce the operational noise levels to within acceptable nontransportation-noise-level performance standards shown in Table 3.9-3, unless the owner(s) and occupant(s) of the sensitive receptors object to the use of temporary blankets to shield their residences from noise. Noise blankets shall be placed in the direct line of sight from the bar to the receptor. Height and length of the noise blankets shall depend upon the size and orientation of the operational portion of the bar in relation to the sensitive receptor, and the equipment to be shielded. The blankets shall generally be no higher than 12 feet, nor longer than 300 feet. Noise blankets shall be removed as soon as the mining of the bar is complete.

Impact Significance After Mitigation

Limiting the operation of heavy-duty equipment to the daytime hours would reduce to less than significant nighttime noise impacts at the 16 receptors identified in Table 3.9-5. Implementation of the other provisions of Mitigation Measure 3.9-1 would reduce on-site equipment noise by 5 to 8 dB. As a result, daytime noise levels would be less than significant at receptors 3, 4, 8, 9, and 10, and possibly receptors 2 and 6 as well, unless the relevant property owner(s) and occupant(s) object to the use of temporary blankets to shield their residences from noise. Impacts would remain significant and unavoidable at receptors 1, 5, 7, and possibly 2 and 6..

Impact 3.9-2 Project operations would expose sensitive receptors to vibration.

Project-related activities would result in vibration from travel by heavy-duty trucks on proposed haul routes for materials transport, from bridge construction, and from heavy-duty equipment at the proposed mining sites. Worst-case vibration levels generated by project-related instream mining were modeled; the results are shown in Table 3.9-6. Vibration impacts were determined by comparing these vibration levels at existing nearby sensitive receptors with applicable standards.

Table 3.9-6
Typical Construction-Equipment Vibration Levels

Equipment	PPV at 25 Feet (in/sec)	Approximate L_v at 25 Feet
Dozer, Front-end Loader, Grader	0.089	87
Loaded Trucks	0.076	86
Significance Threshold (Caltrans and FTA)	0.2/0.08[a]	80

Notes:

L_v = velocity level in decibels referenced to 1 microinch per second and based on the root mean square velocity amplitude; PPV = peak particle velocity

[a] For normal residential buildings and for buildings more susceptible to structural damage, respectively.

Sources: Caltrans 2002, FTA 2006

According to FTA, vibration levels associated with the use of trucks and bulldozers are 0.076 and 0.089 in/sec PPV and 86 and 87 VdB at 25 feet, respectively (see Table 3.9-6). The nearest sensitive receptor to the haul truck routes, the proposed gravel bars, and the proposed temporary bridge north of Alexander Valley Road would be exposed to project-related vibration levels of 70 VdB or 0.037 in/sec PPV at 90 feet (the nearest sensitive receptor is located at the corner of Hassett Lane and Olivier). Vibration levels during project operations would not exceed Caltrans's recommended standard with respect to the prevention of structural damage (0.08 in/sec PPV for more susceptible buildings) or FTA's maximum-acceptable vibration standard of 80 VdB with respect to human annoyance for residential uses at existing nearby sensitive receptors. Thus, implementation of the project would not generate and expose persons to excessive groundborne vibration. As a result, this impact would be less than significant.

Mitigation Measure

None

Impact 3.9-3 Project haul trucks would expose existing sensitive receptors to traffic noise along public roadway segments.

AECOM modeled noise from roadway traffic associated with project operations (e.g., heavy-duty truck travel) on public roadways in the area using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) with CALVENO and data obtained from the traffic study prepared for this project (see Section 3.6, "Traffic and Circulation"). Input data used in the model included average daily traffic levels for nearby area roadways, fleet mixes (percentages of automobiles, medium-duty trucks, and heavy-duty trucks during daytime, evening, and nighttime hours), vehicle speeds, ground attenuation factors, roadway grades, and roadway widths. The project would generate a maximum of 20 round trip truck trips per hour during a 12-hour workday. This would account for an additional 480 one way truck trips per haul route. Appendix J provides the modeling input assumptions and output results for the traffic noise analysis, as well as the modeling methodology.

Table 3.9-7 summarizes the modeled noise levels at 100 feet from the roadway centerline and distance from the roadway centerline to the 70-, 65-, and 60-dBA L_{dn} contours for each affected roadway segment in the study area under project conditions. Table 3.9-7 also includes the net change in existing noise levels from existing to with project. The roadway noise levels, shown in Table 3.9-7, represent worst-case, peak-hour potential noise exposure, which assumes no natural or artificial shielding or reflection from existing or proposed structures or topography. Actual noise levels would vary from day to day, depending on factors such as local traffic volumes, shielding from existing and proposed structures, variations in attenuation rates resulting from changes in surface parameters, and meteorological conditions.

Table 3.9-7
Summary of Modeled Existing Traffic Noise Levels under Existing and Project Conditions on Public Roadways

Roadway	Segment Location		L_{dn} (dBA) 100 Feet from Centerline of Roadway		Net Change (dBA)	Distance (feet) from Roadway Centerline to L_{dn} (dBA) Contour		
	From	To	Existing	Project		70	65	60
Geyserville Avenue	Canyon Road	the north	49.7	60.7	+11.0	24	52	111
Geyserville Avenue	Hamilton Lane	Banti Lane	55.8	61.6	+5.9	28	60	129
Geyserville Avenue	Bill Ferguson Road	Souverain Road	53.9	61.2	+7.3	26	56	121
Healdsburg Avenue	Lytton Springs Road	Lytton Station Road	54.1	61.3	+7.1	26	57	122
Lytton Station Road	Healdsburg Avenue	Hassett Lane	54.2	61.3	+7.1	26	57	122
Hassett Lane	Lytton Station Road	Olivier Road	47.2	60.6	+13.4	23	51	109

Notes: CNEL = community noise equivalent level; dBA = A-weighted decibels
Refer to Appendix J for modeling input assumptions and output results.
Source: Modeling conducted by EDAW in 2009

As shown in Table 3.9-7, noise levels from travel of heavy-duty trucks on public roadways associated with project operations on proposed haul routes would result in traffic noise increases ranging from 5.9 to 13.4 dBA at 100 feet, relative to existing conditions. The table also shows that the distance from the haul routes to the 70-, 65-, and 60-dBA noise contours would range from a minimum of 23 feet to a maximum of 129 feet. The measured existing ambient noise levels along Healdsburg Avenue, Geyserville Avenue, and Lytton Station Road are 63.2 dB L_{dn}, 63.4 dB L_{dn}, and 61.3 dB L_{eq}, respectively as shown previously in Table 3.9-2[1]. The modeled versus measured traffic noise levels along these roadways indicate that traffic noise emanating from U.S. 101 also contribute to the overall measured noise levels because of the

[1] Measurements have different units due to the time lengths of the sampling period.

proximity of the roadways to U.S. 101, along with neighborhood activities and errant stationary sources (heating, ventilation, and air conditioning [HVAC]).

As shown in Table 3.9-7, all public roadways (but not necessarily receptors – see discussion below) designated as haul routes for the project would experience a greater than +3 dB traffic noise level increase in areas adjacent to the roads.

Three significance thresholds apply for noise on public roadways: 1) the General Plan criteria of 60dB L_{dn} for noise at outdoor activity areas (which increases to 65 dB L_{dn} for noise impacted areas); (2) the General Plan criteria of 45 dB L_{dn} for interior noise; 3) the ARM Plan criteria of a 3 dB increase in areas adjacent to haul roads if/and noise levels are raised above the performance standards in the General Plan; or, a 3 dB increase in adjacent areas that are currently designated as noise impacted. The modeled traffic noise levels in Table 3.9-7 show an increase of 5.9 to 13.4 dB at various distances from the roadway centerlines that do not necessarily correspond to the location of sensitive receptors along the roadway. Figures 3.7-1 through 3.7-3 in Section 3.7, "Air Quality," show existing noise-sensitive receptors that occur along the public roads used as haul routes. Table 3.9-8 shows the noise modeling results for heavy-truck hauling activities at the outdoor activity areas of sensitive receptors located adjacent to the public haul routes. Project haul traffic noise predictions show that, without mitigation, seven sensitive receptors would be exposed to noise level increases of 3 dB or more that would exceed the County's exterior transportation-noise-level standard of 60 dB L_{dn} in outdoor activity areas. Noise level increases also likely would exceed the County's interior standard of 45 dB Ldn, given the estimated 15-dB exterior-to-interior attenuation from residential facades with doors and windows closed.

Six of the seven receptors are not noise impacted, and would exceed the relevant thresholds by just 0.5 to 1.6 dB. The final receptor, Receptor I on Geyserville Avenue, is just 40 feet from the road, and thus currently exceeds 60 dB L_{dn}, and is considered noise impacted. As a result, Policy NE-1b states that a maximum noise level of 65 L_{dn} may be allowed, while the ARM Plan states that net noise should not increase by more than 3 decibels (or to 64.7 dBA).

As can be seen by Table 3.9-8, all the receptors exceed their applicable threshold by less than 4 dB, and all but Receptor I would exceed the standard by just 0.5 to 1.6 dBA. These results are conservative and likely overstate the actual impact. Nevertheless, absent mitigation, the impact is considered significant.

Table 3.9-8
Summary of Modeled Project Traffic Noise Levels from Heavy-Duty Truck Travel on Public Haul Routes at Residential Outdoor Activity Area Locations

Roadway	Receptor	Distance to Centerline (feet)	Exterior Traffic Noise Level at Residential Outdoor Activity Area in dBA, Ldn		
			Existing	Standard (Exterior Threshold)	Plus Project
Geyserville Avenue	D	150	47.1	60	**60.5**
	E	150	47.1	60	**60.5**
	F	100	55.8	60	**61.6**
	G	125	54.3	60	**60.2**
	H	100	55.8	60	**61.6**
	I	40	**61.7**	64.7	**67.6**
	J	165	52.5	60	58.4
	K	225	50.5	60	56.4
	K	125	52.4	60	59.7
	N	120	52.7	60	60.0
	O	140	51.7	60	59.0
Healdsburg Avenue	DD	235	48.6	60	55.7
	EE	245	48.3	60	55.4
Lytton Station	CC	100	54.2	60	**61.3**
	DD	325	46.6	60	53.6
Hassett Lane	R	120	46.0	60	59.4
	S	180	43.3	60	56.7
	T	325	39.5	60	52.9
	U	1,050	31.8	60	45.2
	V	390	38.3	60	51.7
	W	135	45.2	60	58.6
	X	210	42.3	60	55.7

Notes: [1] Refer to Figures 3.7-1 through 3.7-3 in Section 3.7, "Air Quality," for locations of sensitive receptors.
Bold = exceedance of county transportation outdoor activity area exterior noise level threshold
Source: Modeling conducted by EDAW in 2007

Mitigation Measure

3.9-3a **Implement Noise Abatement Measures for Public Roadways.** Syar shall meet the relevant exterior noise standard at each potentially impacted residence. To meet the standard, Syar shall implement noise abatement measures, including but not limited to the following measures, on public roadways in the project vicinity:

- All heavy trucks shall be equipped with noise control devices (e.g., mufflers) in accordance with manufacturers' specifications.
- All heavy trucks shall be inspected periodically to ensure proper maintenance and presence of noise control devices (e.g., lubrication, non-leaking mufflers, and shrouding).

- All hauling shall be limited to daytime hours, starting at 7:00 a.m.
- Compression release engine air brakes ("jake brakes") shall not be used while operating haul trucks in residential areas.
- Trucks shall reduce speeds to 5 mph below posted speed limit.
- Syar shall secure all loose chains and other mechanical items on trucks that may otherwise create unnecessary noise.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.9-3a would reduce project-generated off-site traffic noise on public roads to below the relevant exterior standards, and reduce impacts to less than significant. Implementation of Mitigation Measure 3.9-3a does not appear sufficient to mitigate interior noise at Receptor I to the General Plan standard of 45 dB L_{dn}, however, interior noise likely already exceeds 45 dB at Receptor I. As a result, the following Mitigation Measure 3.9-3b shall apply to Receptor I:

3.9-3b **Implement a detailed interior noise study at Receptor I**. Prior to the use of Haul Route 5, the operator shall seek the consent of the owner(s) and/or occupant(s) of the residence at Receptor I and conduct a detailed interior noise study of the residence. The façade of the residence shall be tested for the amount of exterior-to-interior noise reduction provided by the existing residential façade to ensure that the assumption of a 15-dB reduction with windows and doors closed is accurate.

If the detailed interior-noise survey concludes that noise at Receptor I would exceed the interior-noise-level standard of 45 dB Ldn, mitigation shall be provided through installation of noise insulation (window package upgrades that increase the sound transmission class per window by 10 dBA). The project applicant shall offer to compensate the property owner(s) for window upgrades for habitable rooms facing Geyserville Avenue. The property owner(s) shall be responsible for acquiring competitive bids from three (3) qualified contractors to purchase and install the windows. The applicant shall compensate the resident for the cost of the lowest bid after installation of the windows, but shall not be held liable for additional costs that may be incurred during window replacement (dry rot, termite damage, or repairs required to bring the window installation up to code).

This measure shall not apply if Receptor I is not occupied for residential use during the mining season in which Haul Route 5 is utilized.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.9-3b would reduce the impact at Receptor I to elevated interior-noise levels to a less-than-significant level. If the relevant property owner does not agree to a retrofit their home, the impact would be significant and unavoidable.

Impact 3.9-4 Project haul trucks along private roads would expose existing sensitive receptors to noise.

Noise from roadway traffic (e.g., heavy-duty truck travel) associated with project operations also would be generated on private roadways not maintained by the County, where existing traffic data were not currently available. For such instances, noise levels were modeled (see Appendix

J for the modeling methodology). The modeling assumed a speed limit of 15 mph, 40 peak-hour trips, and a mean SEL of 84 dB at 50 feet, as referenced by the FHWA Roadway Construction Model. Table 3.9-9 summarizes the modeled noise levels at the nearest off-site noise-sensitive receptor from project-generated trucks on private roadways. Noise impacts were determined by comparing these modeling results with applicable standards. The calculated noise level for 40 peak-hour haul trips on private roadways is approximately 56.6 dBA L_{eq} at 50 feet. The nearest noise-sensitive receptor along a private roadway is 115 feet from the centerline of the proposed haul route (see Table 3.9-9); the resulting noise level for 40 hourly haul truck trips would be 51.2 dBA at 115 feet.

Table 3.9-9
Summary of Modeled Project Traffic Noise Levels
from Heavy-Duty Truck Travel on Private (non–County Maintained) Haul Routes

Hourly Haul Truck Trips	SEL_{ref}	Speed (mph)	Peak Hour L_{eq} dBA	Peak-Hour L_{eq} dBA Nearest Noise-Sensitive Receptor[1]	Resulting L_{dn} dBA	Modeled L_{dn} (dBA) at Nearest Noise-Sensitive Receptor[1]
40	84	15	56.6	51.2	56.0	50.6

Notes:
ARM Plan = dB = decibels; dBA = A-weighted decibels; L_{dn} = day-night noise level; L_{eq} = equivalent noise level; mph = miles per hour; SEL_{ref} = reference sound exposure level; SMARO = Sonoma County Surface Mining and Reclamation Ordinance
[1] The nearest noise-sensitive receptor is located approximately 115 feet from haul route centerline behind the residence located along Bill Ferguson Road (haul route 3), receptor M
Source: Modeling conducted by AECOM in 2009

Although hauling activities associated with the project would be limited seasonally (from June 1 to November 1 of each year), such activities would last the duration of the mining permit (i.e., 15 years). The same access routes would not be used for the entire 15-year duration, but could be used for multiple years. Table 3.9-10 shows the haul truck noise levels on private roadways at individual receptors along haul routes with identified sensitive receptors (haul routes 3 and 8).

Table 3.9-10 shows that project haul truck trips on private roadways would comply with the County's daytime operational noise source threshold of 50 dBA $L_{eq,}$ 60 dBA L_{10}, and 70 dBA L_{max} (see Table 3.9-3). Note that distances to a receptor may vary between Tables 3.9-9 and 3.9-10 due to difference in measurements from haul route centerline to house façade and to the back yard of the residence (outdoor activity area). The modeling analysis found that noise levels from haul trucks on private haul roads would increase by at least 3 dB, and would exceed General Plan performance standards at night (i.e., before 7:00 a.m.) for L_{eq} thresholds and for L_{max} thresholds. Mitigation Measure 3.9-3a already precludes haul truck traffic before 7:00 a.m., however. With implementation of this measure, no significant impacts would occur pertaining to noise restriction at night. Because L_{max} thresholds would be exceeded at receptor L and M according to the modeling, this is a potentially significant impact.

Table 3.9-10
Summary of Modeled Project Traffic Noise Levels from Heavy-Duty Truck Travel on Private Haul Routes at Residential Outdoor Activity Area Locations

Receptor[1]	Haul Route	Distance to Centerline (feet)	Resulting Noise Levels With 40 One-Way Trips per Hour, dBA		
			L_{eq}	L_{10}	L_{max}
A	8	585	40.6	37.6	68.0
B	8	760	38.8	35.8	66.3
C	8	435	42.5	39.5	69.9
L	3	175	48.4	45.4	*75.8*
M[2]	3	140	49.9	46.9	*77.3*
Significance Threshold Daytime/Nighttime (Sonoma County General Plan maximum exterior noise level standard)			50/45	60/55	70/65

***Italics* = exceedance of the daytime threshold for the outdoor activity area (no exceedance of the nighttime thresholds with implementation of Mitigation Measure 3.9-3a)**
Notes: [1] Refer to Figures 3.7-1 through 3.7-3 in Section 3.7, "Air Quality," for locations of sensitive receptors.
[2] The nearest outdoor activity area is located approximately 140 feet from haul route centerline behind the residence located along Bill Ferguson Road (haul route 3), receptor M
Source: Modeling conducted by AECOM in 2007

Mitigation Measures

3.9-4 Implement Noise Abatement Measures for Private Roadways. Syar shall meet the relevant exterior noise standards at Receptors L and M by either:

- Precluding use of Haul Route 3;
- Implementing temporary noise barriers as close to Receptors L and M as possible to break the line of sight between haul trucks and the receptors, and reduce noise levels up to 10 dBA and into conformance with County noise standards, unless the owner(s) and occupant(s) of Receptors L and M object to the use of temporary barriers to shield their residences. Temporary barriers shall meet the following requirements:

(1) The materials used for temporary barriers shall be sufficient to last through the duration of the mining season and shall be in good condition.

(2) The barriers shall be constructed of three-quarter-inch Medium Density Overlay (MDO) plywood sheeting, or other acceptable material having a surface weight of 2 pounds per square foot or greater, and a demonstrated Sound Transmission Class rating of 25 or greater as defined by American Society for Testing and Materials Test Method E90.

(3) The MDO barriers shall be lined on one side (noise source side) with glass fiber, mineral wood, or other similar noise-absorbing material at least 2 inches thick with a noise reduction coefficient rating of NRC-0.85 or greater, based on certified sound absorption coefficient data taken according to American Society for Testing and Materials (ASTM) Test Method C423.

(4) When barrier units are joined together, the mating surfaces shall be flush with each other. Gaps between barrier units, and between the bottom edge of barrier

panels and the ground, shall be closed with material that will completely close the gaps and be dense enough to fully attenuate noise.

Impact Significance After Mitigation

Implementation of Mitigation Measure 3.9-4a would reduce project-generated off-site traffic noise on private roads to below the relevant exterior standards, and reduce impacts to less than significant. Impacts would remain significant and unavoidable only if the relevant property owner(s) and occupant(s) voluntarily object to the use of temporary noise impacts.

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3.10 PUBLIC SERVICES AND UTILITIES

A. Setting

WATER

Potable, commercial, industrial, and agricultural water supplies in Sonoma County are derived from a number of sources, including surface water, groundwater, and recycled water. Surface water sources are primarily used in the incorporated areas (cities) and are supplemented by groundwater. Residences in rural areas in the county, including those in the vicinity of the study area, rely mostly on groundwater sources (Sonoma County 2006).

The Russian River and Dry Creek (a tributary to the Russian River) are the principal sources of potable surface water supplies in Sonoma County. The Russian River originates in central Mendocino County, approximately 15 miles north of Ukiah, and drains an area of 1,485 square miles, including much of Sonoma and Mendocino Counties. The Russian River reaches the Pacific Ocean at Jenner, approximately 20 miles west of Santa Rosa. The main channel of the Russian River is approximately 110 miles long and has five principal tributaries: the East Fork of the Russian River, Big Sulphur Creek, Maacama Creek, Dry Creek, and Mark West Creek (Sonoma County 2006).

Two major reservoirs provide water storage for the Russian River Basin: Lake Mendocino on the East Fork of the Russian River and Lake Sonoma on Dry Creek. Lake Mendocino provides water for agricultural, municipal, and industrial uses and Lake Sonoma provides water for municipal and industrial uses. Releases from both lakes maintain minimum streamflows required by the State Water Resources Control Board (SWRCB) for recreational uses and fish habitat. A portion of the summer streamflow in the Russian River is augmented by diversions from the Eel River via the Potter Valley Project, a hydroelectric plant owned and operated by the Pacific Gas and Electric Company. Water for the Potter Valley Project is stored in Lake Pillsbury on the Eel River (Sonoma County 2006).

WASTEWATER

Incorporated cities and special districts own and operate numerous centralized wastewater collection and treatment systems throughout the county (Sonoma County 2006). The discharge of treated effluent and disposal of biosolids is permitted by the corresponding regional water quality control board (RWQCB) (for the study area, the North Coast RWQCB). Rural areas not served by centralized systems use on-site septic systems subject to regulation by the Sonoma County Permit and Resource Management Department, with larger systems subject to the approval of the RWQCBs.

SCHOOLS

There are 40 school districts in Sonoma County: 31 elementary districts, three high school districts, and six unified districts. The districts vary substantially in size. The study area is served by the Geyserville Unified School District, which operates two high schools, an elementary school, and a middle school (Geyserville Unified School District 2007).

POLICE PROTECTION

Police protection in the unincorporated portion of Sonoma County is provided primarily by the Sonoma County Sheriff's Department (Sonoma County 2006). The sheriff's department also provides coroner and correctional services countywide (Sonoma County 2006).

The sheriff's department maintains a 24-hour patrol force operating from five substations and the main office. As of February 2003 there were a total of 159 peace officers, including deputies who work in patrol, administration, the helicopter unit, the boating unit, and the civil bureau, with 37 deputies working in investigations for a total of 196 officers. The Sonoma County Sheriff's Department currently maintains a service ratio of approximately 1.01 officers per 1,000 residents, less than the 2.0 officers per 1,000 residents set by the Federal Bureau of Investigation.

FIRE PROTECTION

The study area is served by the Geyserville Fire Protection District. Founded in 1915 as the Geyserville Volunteer Fire Department, the Geyserville Fire Protection District was established in 1996. It is an all-volunteer department that provides fire, medical, and emergency response services to the communities of Geyserville, Alexander Valley, the Dry Creek Valley, the Geysers, and Lake Sonoma. The district operates three fire stations, two Type 1 and three Type 2/3 fire engines, a utility support vehicle, breathing support vehicle, rescue squad vehicle, command vehicle, and water tender vehicle.

SOLID WASTE

The study area is served by the Healdsburg Transfer Station and the Sonoma County Central Landfill, which is located in an agricultural area southwest of Cotati (Sonoma County 2006).

B. Regulatory Framework

Federal and state regulations concerning public resources and utilities are not applicable to this project. In addition, the goals, objectives, and policies of the *Sonoma County General Plan* are not applicable to the project for this issue area.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

- produce an increased need for additional fire protection, police protection, schools, parks, and/or other public facilities or services that would result in new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives;
- produce an increase in water demand that exceeds the available supply or the planned supply;
- require sewer system improvements (including upgrading of collectors) for which there is no planned method of financing and constructing;

- generate solid waste that exceeds the existing or planned capacity of the landfill, or solid waste that does not comply with federal, state, and local statutes related to solid waste; or
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

PROJECT IMPACTS

Findings in the ARM Plan PEIR

Potential impacts on public services and utilities were evaluated in Section 8.14, "Public Services and Utilities," of the PEIR for the aggregate resource management plan (ARM Plan). The ARM Plan PEIR did not identify any impacts relevant to the criteria above for instream mining.

Project Impacts

The project would not require construction of new facilities or the alteration of existing facilities with regard to fire and police protection, schools, parks, or other public facilities. In addition, the project would not generate crime or other incidents requiring police response because the study area would be located within private property with limited public access and the materials stored on the site (e.g., large mechanical equipment, stockpiles) are not particularly susceptible to burglary. Therefore, no impact on governmental facilities would result from implementation of the project and further discussion is not required.

The project would generate sand and gravel that would be used as construction material. It would not generate any solid waste that would require disposal at landfills. Limited trash would be generated from the ten full-time workers on site during the operating season. However, the amount of waste is expected to be minimal and would not exceed the existing or planned capacity of any landfills. As such, impacts would be less than significant.

Impact 3.10-1 The project would increase the demand for water during mining operations. However, the increase would not exceed the available supply.

Syar would use a water truck to apply water for dust control on unpaved haul routes, and a motor grader to periodically rework the road surface and incorporate the wetted soil into the roadbed. The water truck would have a capacity of approximately 4,000 gallons. Application of water for dust control would vary depending on the temperature, but would occur approximately two times per day on a normal summer day. Given the longest estimated unpaved haul route with an area of 7.5 acres (assuming roads of 30 feet wide and 2 miles long), and assuming a volume of 2,000 gallons per acre for dust control, it is estimated that 15,000 gallons of water may be applied twice a day for a total use of 30,000 gallons per day. This watering would only occur during hauling operations, and this amount of water would not be used every mining year - it represents the worst case scenario for watering of haul routes. The water for dust control would be supplied from private irrigations wells.

As discussed in section 3.7, Air Quality, Mitigation Measure 3.7-1 requires additional watering of disturbed areas to reduce PM_{10} emissions. All active mining areas, parking areas, staging areas and soil stockpile areas must be watered at least twice daily and more often in windy periods (i.e., 10mph).

This would occur throughout the operating season, or up to 5 months. Because mining will occur at only one bar at a time, watering will be limited to that one bar and the associated active areas.

The largest actively mined bar area is approximately 21 acres, and an approximately additional 3.5 acres would be needed for stockpiles and staging. As a result, the largest estimated area that may be watered would be 24.5 acres. Assuming a volume of 2,000 gallons per acre for dust control, it is estimated that an additional 49,000 gallons of water may be applied twice a day when implementing this mitigation measure for a total use of 98,000 gallons per day. This water would also be supplied from irrigation wells. When combined with Syar's proposed watering of the unpaved haul routes, the worst-case estimate of daily use of water is 128,000 gallons. This amount would not be used every mining year, and the amounts would vary depending on the actual area of the bars being mined, the staging areas, and the length of the relevant haul route. Use of 128,000 gallons per day represents the worst case scenario of watering the largest mining area, and the longest unpaved haul route, in the same mining year.

The historic use of groundwater resources in some areas of the county has resulted in a decline of the groundwater table (Sonoma County 2006). The significance of potential groundwater decline is unknown because of the lack of a countywide groundwater well monitoring network and a historic database. As Described in Section 3.2, "Geomorphology, Hydrology and Water Quality," the California Department of Water Resources (DWR), in cooperation with the Sonoma County Water Agency, conducted a series of studies of groundwater resources in Sonoma County between 1975 and 1982 that are documented in DWR Bulletin 118-4. As indicated by the studies, groundwater levels within the Alexander Groundwater Sub-basin (encompassing the study area within the Alexander Valley) are considered to be relatively stable. However, this information may not represent current conditions due to changes in land use and population over the past 30 years.

The *Sonoma County Aggregate Resources Management Plan, 2004–2005 Annual Monitoring Program Results for Russian River, Sonoma County, California, Final Report* (PRMD 2007) indicated there is no regular groundwater monitoring conducted in the Lower Alexander Valley reach of the Russian River. However, water surface elevations were taken at four locations between River Mile 49.8 and River Mile 47.5, providing an indirect measure of the groundwater table. The data show a relatively small increase of 0.3 foot in water surface elevation from 1997. However, this change does not necessarily reflect an increase in groundwater levels, as surface water level elevations varied between cross sections.

The project would increase water demand during mining activities for the proposed uses. However, the project's use of up to 114,000 gallons per day of water for up to 5 months per year would not result in a significant decline in groundwater supplies, largely because the relevant wells are located adjacent to the Russian River and groundwater would be replenished during the winter months. The project's estimated water demand thus would not exceed the available groundwater supply, and project impacts would be less than significant.

Mitigation Measures

None

Impact 3.10-2 The project would not increase wastewater production such that sewer system improvements would be needed.

The maximum number of full-time staff working at mining sites would be 10 if simultaneous mining operations occur. Staff would use portable sanitation toilets with built-in wash sinks. Sewage from the portable toilets would be cleaned periodically by a contract provider and disposed of appropriately. The wastewater production of 5 full-time workers at the study area during the weekday hours for the 5-month operating season (or 10 full-time workers for up to a 50-day operating season) would be limited, and would not result in the need for any sewage system upgrades to the existing system. As such, potential impacts would be less than significant.

Mitigation Measures

None

Impact 3.10-3 The project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

Syar would remove vegetation as part of mining activities from the following areas:

- the riparian area north of Alexander Valley Road to facilitate access to Bar SD-1,
- specific locations on the riverbanks to facilitate access to individual bars during mining operations, and
- the gravel bed skimming area (for transplanting to the high bank and upper head of the bars or removal of invasive species such as the giant reed).

Vegetation removal using mechanical equipment during mining activities has the potential to ignite a fire during the dry season, when vegetation is typically dry. However, upon completion of vegetation removal, the risk of fire ignition would be reduced, as mining operations would occur in areas devoid of vegetation. The study area is located within a rural area that is not considered wildlands. The Russian River is lined by riparian vegetation and surrounded primarily by cultivated vineyards. This risk of fire would be low, given the limited time that vegetation clearing would occur and because the area is not within wildlands. As such, the project would result in a less-than-significant impact associated with the risk of loss, injury, or death involving fires.

Mitigation Measures

None

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3.11 HAZARDS AND HAZARDOUS MATERIALS

A. Setting

Hazardous materials are substances with certain physical and chemical properties that could pose a substantial present and future hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. The categories that apply to hazardous materials are toxicity, ignitability, corrosivity, or reactivity.

ENSR conducted a database search of hazardous materials using EnviroStor, a program that identifies properties in California that have known contamination or properties for which there may be reasons for further investigation. It includes sites listed under the federal Superfund, state response, and state voluntary cleanup programs. It provides a brief history of cleanup activities, contaminants of concern, and scheduled future cleanup properties regulated by the California Department of Toxic Substances Control (DTSC) Site Mitigation and Brownfields Reuse Program where extensive investigation and/or cleanup actions are planned or have been completed. EnviroStor provides a map identifying these regulated sites, which was used to determine whether any of the listed sites occur within the study area. Based on the EnviroStor map, the study area is not located on any of the sites identified in the database. As such, the project is not located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

The site is vacant land in the floodplain of the Russian River. As such, it is devoid of areas that currently involve hazardous materials. No evidence of hazardous material storage, manufacturing, or use occurs within the study area.

B. Regulatory Framework

Numerous federal, state, and local laws and regulations regulate the use, storage, and disposal of hazardous materials, including management of contaminated soils and groundwater. The U.S. Environmental Protection Agency (EPA) is the federal agency that administers hazardous materials and waste regulations. State agencies include the California Environmental Protection Agency, which includes DTSC, the North Coast Regional Water Quality Control Board (North Coast RWQCB), the California Air Resources Board (ARB), and other offices. The Northern Sonoma County Air Pollution Control District (NSCAPCD) has jurisdiction over the air basin, which includes this area of Sonoma County. Local regulatory agencies include the Sonoma County Departments of Health Services and Emergency Services. A description of agency jurisdiction and involvement in management of hazardous materials is provided below.

FEDERAL REGULATORY ISSUES

EPA is the federal agency responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. The legislation includes the Resource Conservation and Recovery Act of 1986, the Superfund Amendments and Reauthorization Acts of 1986, and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The federal regulations are primarily codified in Title 40 of the Code of Federal Regulations. EPA provides oversight and supervision for site investigations and remediation projects, and has developed land disposal restrictions and treatment standards for the disposal of certain hazardous wastes.

STATE REGULATORY ISSUES

California Department of Toxic Substances Control

DTSC works in conjunction with EPA to enforce and implement specific laws and regulations pertaining to hazardous wastes. The California legislation, for which DTSC has primary enforcement authority, includes the Hazardous Waste Control Act and the Hazardous Substance Account Act. Most state hazardous waste regulations are contained in Title 22 of the California Code of Regulations. DTSC generally acts as the lead agency for soil and groundwater cleanup projects, and establishes cleanup and action levels for subsurface contamination that are equal to, or more restrictive than, federal levels.

California Air Resources Board and the Northern Sonoma Air Pollution Control District

The study area is in the North Coast Air Basin. ARB and NSCAPCD have joint responsibility for developing and enforcing regulations to achieve and maintain federal and state ambient air quality standards in the district. ARB is responsible for enforcing the Clean Air Act and California ambient air quality standards. NSCAPCD is responsible for regulation of air emissions from stationary sources, monitoring air quality, and reviewing air quality issues in environmental documents. Section 3.7, “Air Quality,” further describes the responsibilities of ARB and NSCAPCD, air quality conditions in the North Coast Air Basin, and potential air quality impact associated with the project.

California Department of Industrial Relations, Division of Occupational Safety and Health

Worker health and safety, which is regulated at the federal level by the U.S. Department of Industrial Relations, is regulated in California by the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA). California standards for workers dealing with hazardous materials are contained in Title 8 of the California Code of Regulations, and include practices for all industries (General Industry Safety Orders), and specific practices for construction and hazardous waste operations and emergency response. Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

LOCAL REGULATORY ISSUES

North Coast Regional Water Quality Control Board

The study area is located in the jurisdiction of the North Coast RWQCB. The RWQCB is authorized by the California Porter-Cologne Water Quality Act of 1969 to implement water quality protection laws. The RWQCB provides oversight for sites where the quality of groundwater or surface waters is threatened, and has the authority to require investigations and remedial actions.

Local Hazardous Materials Management

The primary agencies responsible for local enforcement of federal and state laws controlling hazardous materials management include the Hazardous Materials Division of the Sonoma County Department of Emergency Services (SCDES) and the Environmental Health Division of the Sonoma County Department of Health Services (SCDHS). SCDES is a certified unified program agency, the local agency responsible for coordination of hazardous waste generator programs, underground fuel tank management, tiered permitting process for waste treatment, and administering the Hazardous Materials Business Plan program. SCDHS is responsible for management of leaking underground storage tank site investigation and cleanup.

Businesses that store, handle, or dispose of hazardous materials must submit a Hazardous Materials Business Plan (business plan) in accordance with Section 25504 of the California Health and Safety Code. The business plans must be updated every 2 years or within 30 days after a substantial change in site operations. The business plan must:

- list all the hazardous materials stored at a site,
- identify emergency response procedures for spills and personnel,
- identify evacuation plans and procedures, and
- identify training records for personnel to substantiate annual refresher training.

If hazardous materials are used or stored at a site, all employees are also required to receive hazard communication training. The purpose of the training is to ensure that employees understand the nature of the hazardous materials that they handle and can safely use, store, and dispose of the materials in accordance with Title 8 of the California Code of Regulations. The hazard communication standard requires that employers must:

- prepare an inventory of hazardous materials,
- make Material Safety Data Sheets available to employees,
- conduct employee training on chemical hazards and safe handling of materials, and
- ensure that hazardous material containers are properly stored and labeled.

Inspections of businesses that store hazardous materials are performed by SCDES. The hazard communication requirements are enforced by Cal/OSHA.

Sonoma County General Plan

The goals, objectives, and policies from the *Sonoma County General Plan* are not applicable to the project for this issue area.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

- create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

- be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or environment;
- result in a safety hazard for people residing or working in the study area (for a project located within the vicinity of a private airstrip or within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport); or
- impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

PROJECT IMPACTS

Findings in the ARM Plan PEIR

The potential impact of hazardous materials releases at mining sites was evaluated in Section 8.16, "Public Health and Safety," of the Aggregate Resource Management Plan (ARM Plan) PEIR. The impact analysis determined that adherence to existing federal, state, and local laws and regulations would reduce the potential impact of releases of hazardous materials to a less-than-significant level. The mitigation measure specifically referenced adherence to the requirement that a spill prevention control and countermeasures plan be prepared for mining operations.

Project Impacts

Syar would use a mobile fuel truck to fuel mining equipment on the terraces away from the high banks of the river channel. Haul truck fueling would take place off-site at the Syar-owned aggregate processing plant in Healdsburg or at off-site fueling stations. Major repairs would occur at the aggregate processing plant in Healdsburg, while regular equipment maintenance would occur within terrace areas. Hazardous wastes generated by the mining operations would consist primarily of waste oils, spent lubricants and antifreeze. These wastes would be managed at the aggregate processing plant at Healdsburg.

The project is not located within one-quarter mile of an existing or proposed school, in the vicinity of a private airstrip, or within 2 miles of a public airport. As such, health and safety impacts on schoolchildren, and people residing or working in the study area would not occur. The project is not located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, nor would it impair implementation of or interfere with any adopted emergency response plans or emergency evacuation plans.

Impact 3.11-1 Transport, storage, and use of hazardous materials during mining or river enhancement plan activities (i.e., petroleum products) could be spilled or otherwise released through improper handling or storage, or through unforeseen and accidental conditions.

Proposed mining or river enhancement plan activities would involve the use of certain hazardous materials (e.g., fuels, lubricants, and antifreeze for operation of machinery and haul trucks). Inadvertent release of these materials could result in adverse impacts on soil, surface water, and/or groundwater. The on-site storage and/or use of large amounts of these materials would not be required at the mining and reclamation sites, since equipment fueling would be performed by a mobile fuel truck on terraces above the riverbanks, and haul truck fueling would take place off-site at fueling stations already covered by existing permits. Minor maintenance of equipment may occur on the terraces but major maintenance activities would occur at the processing plant. The Sonoma County ARM Plan specifically requires the preparation and adherence to a spill prevention plan for mining operations. Appendix E shows the basic framework of a Spill Prevention Fueling and Lubrication Plan prepared for the project. However, the current plan does not provide all the necessary detailed information required by federal, state, and local laws. To ensure that mining and reclamation activities would not result in an accidental release that would affect soil, surface water, or groundwater, a fully developed plan with detailed procedures must be available on-site for staff implementation in the event of an accidental release. Without the required details in the plan, potential impacts associated with the accidental release of hazardous materials would be significant.

The transport of diesel and other petroleum products used by machinery for mining would not pose any more significant problem than typical transport of such materials in the area and elsewhere in the county. These hazardous materials would be stored off-site, although some maintenance-related materials may be stored on-site. Potential health risks from diesel and other oils and grease leaking into groundwater aquifers or to surface waters would be remote, given the required compliance with the existing plan.

Mitigation Measures

3.11-1 **Update the Spill Prevention Fueling and Lubrication (SPFL) Plan.** Before initiation of mining activities, Syar shall update its SPFL plan in conformance with all federal, state, and local requirements and the ARM Plan. The SPFL plan shall be reviewed and approved by the Sonoma County Department of Emergency Services. The SPFL plan shall describe in detail the safety procedures followed by Syar (e.g., weekly visual inspections of any tanks and storage containers, spill prevention procedures, employee training regarding the use of equipment, spill prevention and response training, risk management), disposition of spill response equipment, as well as the procedure for response and notification in case a spill occurs. Additionally, the SPFL plan shall address the following issues:

- Vehicle and mining machinery equipment fueling and maintenance procedures and practices shall be designed to minimize or eliminate the discharge of hazardous material spills and leaks to the ground or to watercourses. These procedures shall be applied on all sites where vehicle and equipment fueling and maintenance take place.
- On-site vehicle and equipment and machinery fueling and maintenance shall only be used where it is impractical to send vehicles and equipment off-site for fueling and maintenance. Any stationary equipment on-site shall be placed on a bermed containment pad covered by a minimum 10-millimeter liner that is impervious to petroleum products.
- Drip pans or absorbent pads shall be used during vehicle and equipment fueling and maintenance, unless the fueling or maintenance is performed over an impermeable surface in a dedicated fueling area.
- Dedicated fueling and maintenance areas shall be protected from storm water run-on and runoff, and shall be located at least 15 meters (50 feet) from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.

- Fueling nozzles used in vehicle and equipment fueling shall be equipped with automatic shut-off capabilities to prevent the overflowing of fuel tanks and to control drips. Equipment fueling operations shall not be left unattended.
- Where required by NSCAPCD, vapor recovery nozzles shall be used to help control drips and air pollution. Nozzles shall be secured upright when not in use.
- Fuel tanks shall not be topped off. Allowances shall be made to account for fuel expansion, particularly during hot weather. Fuel tanks shall be filled to a maximum of 85% full.
- Vehicles, machinery, and equipment shall be inspected each day before use for engine oil, hydraulic oil, and coolant system leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the study area. Hoses and hydraulic lines shall be inspected for abrasions and cracking. If a hose or hydraulic line is damaged or in obvious need of repair, it shall be replaced before the equipment starts work for the day. Hydraulic system pressure relief valves shall be tested periodically to ensure the equipment hydraulic system does not overpressurize and cause hydraulic hose or fitting failure.
- Absorbent spill cleanup materials and spill kits shall be available in fueling and maintenance areas and on fueling trucks and shall be disposed of properly after use. Absorbent spill cleanup materials shall be used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be contained, removed promptly, and disposed of properly.
- Mobile fueling of equipment shall occur at designated fueling areas on the terraces away from the high banks of the river channel.
- Fueling and maintenance areas shall be protected with berms and/or dikes, where practical, to prevent run-on and runoff[1] and to contain spills.
- Fueling areas and storage tanks shall be inspected regularly.
- An ample supply of spill cleanup material shall be kept on the site.
- Syar shall immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

Syar shall implement the measures in the plan in the event of an accidental release of hazardous materials as required in the Sonoma County ARM Plan. A copy of the final documentation of the cleanup/spill incident report following an accidental release of hazardous materials shall be submitted to the Sonoma County Department of Emergency Services to demonstrate the completion of the mitigation.

Impact Significance after Mitigation

Compliance with the ARM Plan and Mitigation Measure 3.11-1 would reduce all impacts related to the transport, storage, and use of fuels and other chemicals to a less than significant level.

[1] Run-on refers to surface flowing water from the surrounding vicinity that flows onto the fueling and maintenance areas during rain events. Runoff refers to surface flowing water that flows off the site during rain events. Both may be of concern should they become commingled with any spilled fuel/maintenance materials.

3.12 ENERGY

A. Setting

California's major sources of energy are petroleum (i.e., gasoline and oil), electricity, and natural gas. The majority of the county's electricity is provided by Pacific Gas and Electric Company (PG&E) (Sonoma County 2006), which draws on a variety of energy sources to feed its regional power grids. The Geysers Geothermal Power Plants in Sonoma and Lake Counties generate geothermal energy that also supports the PG&E power supply. Sonoma County has no petroleum or natural gas production facilities.

B. Regulatory Framework

The goals, objectives, and policies of the Sonoma County General Plan and other County energy policies are not applicable to the proposed project.

C. Potential Impacts and Mitigations

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

A project will typically have a significant impact if it meets any of the following criteria:

- Generates demand for energy services that results in the need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives; or
- Generates demand for energy services that exceeds the ability of the service provider to provide without substantially decreasing its ability to serve the existing population.

PROJECT IMPACTS

ARM Plan PEIR Findings

The ARM Plan PEIR analyzed potential impacts of energy use in Section 8.10, Energy and Natural Resources. The PEIR noted that instream gravel removal can result in resource consumption and depletion of resources from instream gravel removal. Because the ARM Plan's operation standards balance the degradation and aggradation of instream resources, the PEIR identified this impact as less than significant.

Project Impacts

This section evaluates the potential for the project to generate demand for energy services. The discussion of sand and gravel as a renewable resource is described in Section 4.3, Irreversible Environmental Changes of the Project as Proposed, in Chapter 4, Topical Issues and Impact Summaries.

Impact 3.12-1 The project would not generate demand for energy services that would result in the need for new or physically altered facilities or exceed the ability of the service provider to provide without substantially decreasing its ability to serve the existing population.

Energy use at the study area would consist of gasoline and diesel fuel to power heavy machinery and vehicles during five months of mining and reclamation operations per year, including implementation of the REP. The project will require the use of diesel fuel and gasoline over the life of the project; however, the use of fuels would not significantly affect energy services. For example, project demand for these sources would not require the construction of new or expansion of existing production facilities. In addition, project demands would not be expected to exceed the ability of existing service providers to meet the demand of its existing populations. The project would therefore have a less than significant impact on energy resources, and no mitigation is required.

Mitigation Measures

None

3.13 LAND USE AND AGRICULTURE

A. Setting

REGIONAL SETTING

The project is located along a segment of Russian River in the Alexander Valley in Sonoma County. This portion of the Russian River is flanked by U.S. Highway 101 (U.S. 101) approximately 0.5 mile to the west and State Route (SR) 128 approximately 0.4 mile to the east. Nearby towns and cities include Geyserville, which is one-half mile west of the Russian River and near the northern third of the study area, as well as Cloverdale (located 9 miles to the north of Geyserville), and Healdsburg (located 6 miles to the south of Geyserville).

LOCAL SETTING

Land Uses

The project reach is open space floodplain devoid of developed uses. Historic mining has occurred on the bars but is not active at present in the study area. Recreation (e.g., boating and fishing) is the sole use. The mining sites are surrounded by vineyards, riparian vegetation, scattered rural residential sites, and structures related to farming. The closest residences to the proposed instream mining are within approximately 700 feet. Properties abutting the mining areas proposed to be mined range in size from 7 acres to approximately 305 acres. Table 3.13-1 shows the parcel numbers, zoning designations, and *Sonoma County General Plan* (County General Plan) land use designations of the proposed gravel bars.

Agricultural and Surrounding Lands

Figure 3.13-1 shows the farmland classifications as designated by the U.S. Department of Agriculture. Lands within approximately 0.5 mile of the Russian River riparian corridor to the east and west are classified primarily as Unique Farmland. This classification includes farmland of lesser quality soils used for the production of the state's leading agricultural crops, such as vineyards and orchards. Grape production for winemaking is an important economic activity in this area.

Farther west and southwest, there is a mixture of lands classified as Prime Farmland and Farmland of Statewide Importance. The former is defined as the best farmlands, which are able to sustain long-term agricultural production. Similarly, Farmland of Statewide Importance is considered to be capable of sustained agricultural production, though it may be found in less desirable locations (e.g., areas of greater slope and soils with moisture retention potential). Both types of farmlands are irrigated for sustained high yields. The town of Geyserville is located west of the Geyserville Bridge, adjacent to U.S. 101. West of the town (and the highway), there is a mixture of vacant and nonagricultural lands, grazing lands, and forestlands.

Areas farther east from the study area are utilized primarily for grazing, and additional Unique Farmland is interspersed throughout the area. The River Rock Casino is located in the foothills, less than 1 mile from the project, to the east. This property is approximately 5 miles south of the Geyserville Bridge. In the southeast portion of the study area, north of the Jimtown Bridge, there is a mixture of agricultural uses, most of which are on soils designated as Prime Farmland. The southernmost portion of the study area includes the Jimtown Bridge, where Alexander Valley

Road traverses the Russian River. The Alexander Valley RV Park and Campground is located just north of the bridge.

Table 3.13-1
Proposed Gravel Bar Zoning and General Plan Designations

Gravel Bar(s)	Assessor's Parcel No.	Base Zoning	Zoning Combining District(s)	General Plan Designation
S-13, S-14	141-190-056	RRD B6 20	BR, F1, F2, MR, SR, VOH	RRD 20
S-13, S-12	141-190-059	RRD B6 20	BR, F1, F2, MR, SR, VOH	RRD 20
S-12, S-11	141-190-072	LIA B6 20	BR, F1, F2, MR, SR, VOH Z	LIA 20
S-10, S-9	140-230-037	RRD B6 20	BR, F1, F2, MR, SR, VOH	RRD 20
S-10	140-220-013	RRD B6 20	BR, F1, F2, MR, SR, VOH	RRD 20
S-10	140-220-012	RRD B6 20 / LIA B6 20	BR, F1, F2, MR, SR, VOH	RRD 20 LIA 20
S-8, S-7	140-080-016	RRD B6 40	BR, F1, MR, SR, VOH, Z	RRD 20
S-6, S-5, S-4	140-060-002	RRD B6 40	BR, F1, F2, MR, SR, VOH Z	RRD20
S-4, SD-5, SD-4	131-050-004	RRD B6 20 / RRDWA B6 20/LIA B6 20	BR, F1, F2, MR, SR, VOH	RRD 20 LIA 20
SD-4	131-060-024	RRD B6 20 / RRDWA B6 20 / LIA B6 20	BR, F1, F2, MR, SR, VOH	RRD 20 LIA 20
SD-2	091-020-012	LIA B6 20 / RRD B6 20	BR, F1, F2, MR, SR, VOH Z	LIA 20 RRD 20
SD-1	131-090-010	LIA B6 20 / RRDWA B6 20	BR, F1, MR, SR, VOH, Z	LIA 20 RRD 20

Notes:

Zoning Base and Combining District Designations
RRD – Resources and Rural Development
LIA – Land Intensive Agricultural District
RRDWA – Resources and Rural Development (Agricultural Preserve) District
BR – Biotic Resources Combining District
F1 – F1 Floodway Combining District
F2 – F2 Floodplain Combining District
MR – Mineral Resource Combining District
SR – Scenic Resources Combining District
VOH – Valley Oak Habitat Combining District
Z – Second Unit Exclusion Combining District

General Plan Land Use Designations
LIA – Land Intensive Agriculture
RRD – Resources and Rural Development
LEA – Land Extensive Agriculture
DA – Diverse Agriculture
RR – Rural Residential

Source: Sonoma County 2006

Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
Sonoma County California

AECOM
April 2010

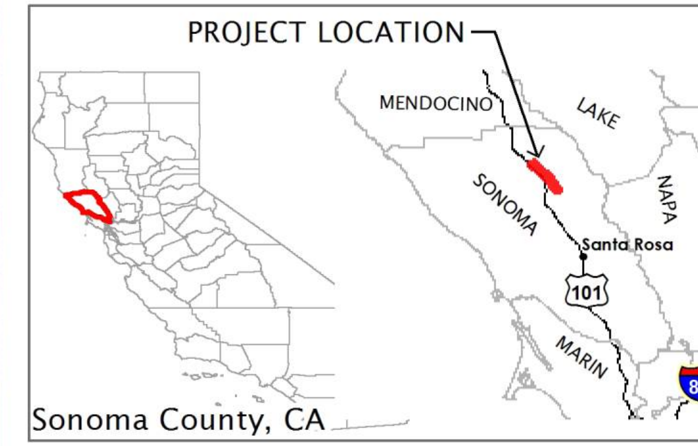


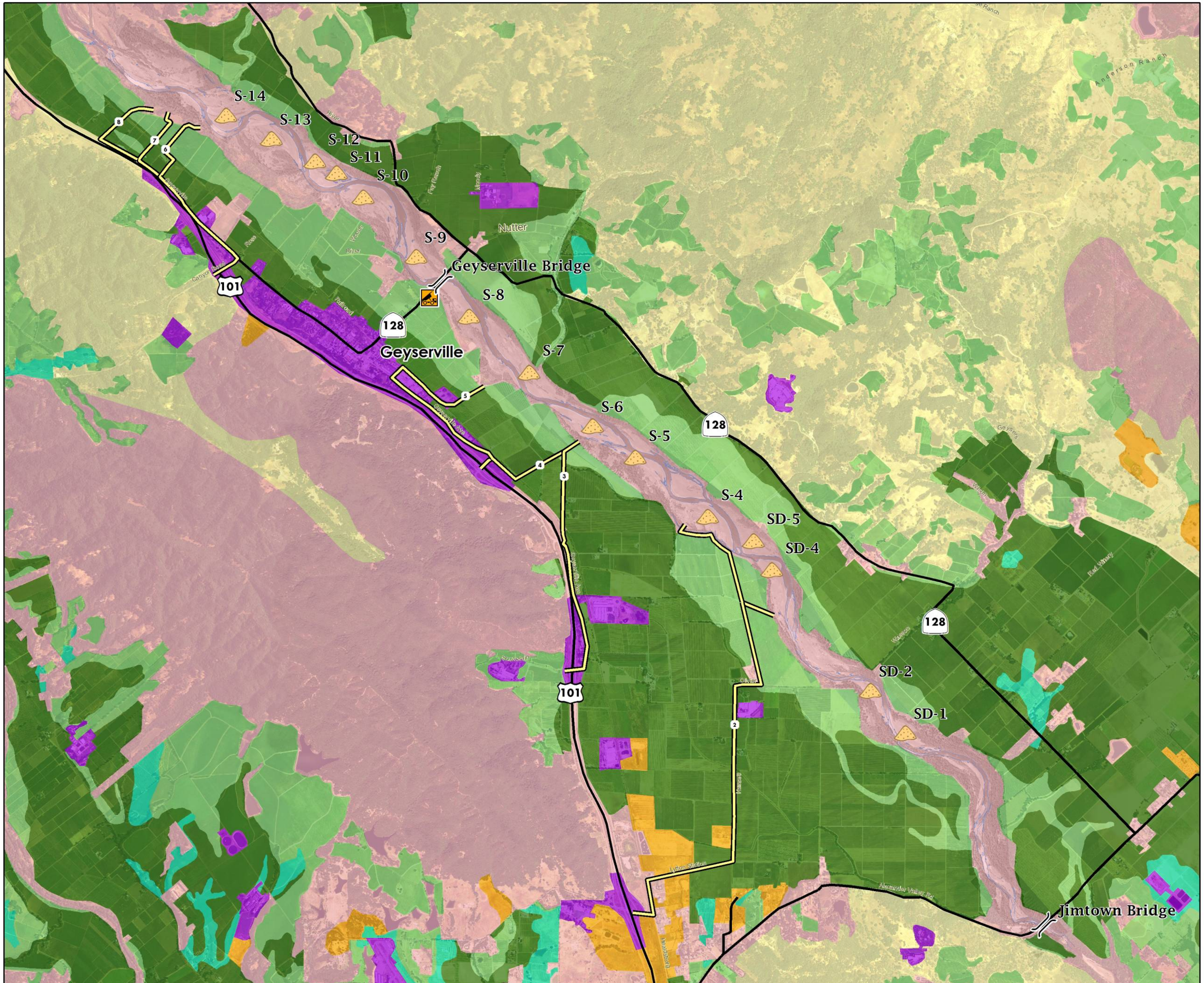
Figure 3.13-1
Farmland Sonoma County

- Gravel Bars
- Staging Area
- Access Roads
- Russian River Course (May 2006)
- Main Roads

Farmland Classifications

- Farmland of Local Importance
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Developed
- Grazing
- Other

Source: USDA-FSA Aerial Photography August 2005 (Color)
Delta Geomatics Corporation May 2006 (Black and White)



1 0.5 0 Miles

Source: Syar Industries Inc. EDAW,
Projection State Plane NAD 1983 California II

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Within Sonoma County, many of the lands designated as either Prime Farmland or non-Prime Farmland are enrolled in Williamson Act contracts (California Department of Conservation 2006). Parcels under a Williamson Act contract within or adjacent to the study area are shown below.

- Assessor's Parcel Number (APN) 091-010-014
- APN 131-050-004 (S-4, SD-5, SD-4)
- APN 131-060-024 (SD-4)
- APN 131-090-004
- APN 131-090-010 (SD-1)

B. Regulatory Framework

STATE REGULATORY ISSUES

California Surface Mining and Reclamation Act of 1975

The purpose of the California Surface Mining and Reclamation Act (SMARA) is to protect and ensure the efficient conservation and use of essential minerals, especially those resources that have regional or statewide economic significance. SMARA requires that local resource management plans be reviewed for consistency with SMARA requirements for local lead agencies. County actions, such as the aggregate resource management plan (ARM Plan), are seen as the local implementation of SMARA.

In summary, SMARA requires:

- county or city approval of permits for new surface mining operations;
- minimization of adverse environmental impacts and prevention of residual hazards;
- state review of local management plans and policies and proposed mining permits and reclamation plans;
- incorporation and protection of state-classified and state-designated areas of statewide and regional significance within local general plans to ensure that mineral supplies are available as needed to meet demand;
- local land use regulations to protect state-designated resource areas from development that would preclude mineral extraction, including buffer zones for adjacent land uses;
- development of local resource management policies that emphasize the conservation and development of mineral deposits of regional and/or statewide significance;
- reclamation to beneficial uses after mining and approval of a feasible reclamation plan before permitting;
- approval of reclamation plans for operations with vested rights established before 1976;
- financial assurances and annual reports from operators to confirm and monitor the completion of approved reclamation measures;
- inspection of mining operations by local agencies and reporting inspection findings to the state; and
- development of statewide guidelines for reclamation and financial assurances.

Pursuant to the above requirements, the State Mining and Geology Board has adopted reclamation standards for surface mining activities. These standards were considered in the preparation of the ARM Plan. These guidelines do not dictate the post-mining use of mined lands but do provide useful standards for establishing appropriate conditions for various post-mining uses.

The California Division of Mines and Geology of the California Department of Conservation, pursuant to SMARA, has designated regionally significant construction aggregate resources (Sonoma County 1994). In January 1987, the division published a report on the North San Francisco Bay Production-Consumption Region, which includes Sonoma County. This report, which was prepared under the direction of the State Mining and Geology Board, designated the aggregate resources in the county that are considered of regional significance. The sites designated as such in Sonoma County have been mined in the past or are adjacent to aggregate mining areas. All of the land within the Alexander Valley reach of the Russian River designated by the County for instream operations in the 1980 ARM Plan was included in the state designation of regionally significant construction aggregate resources.

SMARA does not directly limit or mandate local actions on mining or development proposals in designated resource areas, but it does require state review of proposed uses that would "threaten the potential to extract minerals" and allows appeals by applicants whose requests for mining permits were denied by local agencies.

SMARA creates a vested right to continue to conduct surface mining operations without a new mining permit for parties that commenced operations and obtained required permits before January 1, 1976. In the early 1980s, Sonoma County solicited and reviewed data on past permits and operations and made formal determinations on the nature of vested rights that had been established. Vested rights were approved for most of the existing quarries, several terrace pits, deep instream operations in the middle reach of the Russian River, and a few small gravel bar skimming sites on other streams. Reclamation plans have been approved for nearly all vested sites in the county, including all those in operation in 1993. The ARM Plan considered the aggregate materials that can or may be provided by vested sites, as well as by the other permitted sites approved later, in its analysis of future supply and demand.

State Lands Commission

The State of California acquired sovereign ownership of tidal and submerged lands and the beds of navigable rivers upon its admission to the United States on September 9, 1850. On nontidally influenced navigable waterways, the state claims fee ownership below the low-water line and a public trust easement for commerce, navigation, and fisheries over the lands between the low- and high-water lines. The state's fee interest includes ownership of the surface and mineral resources. The public trust easement includes the right of the public to use waterways for boating, swimming, and other water-related uses and the preservation of environmental values.

Since 1938, the State Lands Commission (SLC) has been charged with the administration, protection, and management of these lands. SLC jurisdiction extends in the navigable portion of the Russian River at least to the Healdsburg city limits and may also extend upstream of Healdsburg. Aggregate mining on state-owned lands is not prohibited, but does require the formal discretionary approval of SLC and possible payment of royalties to the state.

Williamson Act

In 1965, the California Legislature passed the California Land Conservation Act, commonly referred to as the Williamson Act. The act is a voluntary land conservation program that is administered by counties and cities, with technical assistance from the California Department of Conservation. The objectives of the act are:

- to preserve farmland for a secure food supply for the state and nation, and for future generations;
- to maintain agriculture's contribution to local and state economic health;
- to provide economic relief to tax-burdened farmers and ranchers;
- to promote orderly city growth, and discourage leapfrog development and premature loss of farmland; and
- to preserve open space for its scenic, social, aesthetic, and wildlife values.

Landowners enrolled in the Williamson Act are taxed at a lower rate using a scale based on the actual use of the land under contract. In turn, landowners commit to restricting the use of their land to agriculture and open space uses for 10 years. In addition, subdivision of lands under Williamson Act contracts is limited to a minimum of 10-acre parcels and must incorporate a 200-foot setback from incompatible adjacent uses (California Department of Conservation 2004). In return, the landowner is guaranteed a relatively stable tax base, founded on the value of the land for agricultural/open space use only and unaffected by its development potential. The term of the contract is essentially indefinite, as it automatically renews itself every year.

Within the vicinity of the project, lands under Williamson Act contract are designated primarily Prime Farmland. However, a few of the parcels containing areas of proposed mining activities are under Williamson Act contracts, as described in Section A, "Setting," above.

The Instream Management Program of the ARM Plan allows instream operations on Williamson Act contracted lands if mining and processing take place only on lands not suitable for agriculture.

LOCAL REGULATORY ISSUES

Sonoma County General Plan

The County General Plan (Sonoma County 1989) identifies the following goals, objectives, and policies related to land use in the study area:

Goal LU-8: Protect lands currently in agricultural production and lands with soils and other characteristics, which make them potentially suitable for agricultural use. Retain large parcel sizes and avoid incompatible non-agricultural uses.

Objective LU-8.1: Avoid conversion of lands currently used for agricultural production to non-agricultural use.

Natural Resource Land Use Policy: The purpose of natural resource land use policy is to protect lands used for timber, geothermal and mineral resource production and for natural resource conservation. The Resources and Rural Development category allows residences at very low densities due to lack of infrastructure, greater distance from public services, poor access, conflicts with resource conservation and production, and significant physical constraints and hazards. Proposed amendments to the land use map in this category shall consider all of the preceding criteria. The intent is that natural resource areas be managed and conserved, and that production activities avoid depletion and promote replenishment of renewable resources.

The study area is included in the Cloverdale/Northeast County planning area, which also contains the city of Cloverdale and the community of Geyserville. Specific objectives and policies related to land use include the following:

Objective LU-11.1: Retain agricultural lands in Dry Creek, Alexander, Oat and Knights Valleys in agricultural production.

Objective LU-11.5: Continue to regulate aggregate and geothermal resource development to minimize adverse impacts. Limit uses in the Known Geothermal Resource Area (KGRA) to those which do not conflict with geothermal exploration and production.

Policy LU-11l: Use the Aggregate Resources Management Plan and Geothermal Resources Management Plan as the policy documents for development of aggregate and geothermal resources. Avoid terrace mining in the Alexander Valley.

In addition to the Land Use Element, the Resources and Conservation Element identifies additional goals, objectives, and policies related to mining:

Goal RC-11: Provide for production of aggregates to meet local needs and contribute the County's share of demand in the North Bay production-consumption region. Manage aggregate resources to avoid needless resource depletion and ensure that extraction results in the fewest environmental impacts.

Objective RC-11.1: Use the Aggregate Resources Management Plan to establish priority areas for aggregate production and to establish detailed policies, procedures, and standards for mineral extraction.

Objective RC-11.2: Minimize and mitigate the adverse environmental effects of mineral extraction and reclaim mined lands.

Policy RC-11a: Consider lands designated in the Aggregate Resources Management Plan (ARM) as priority sites for aggregate production and mineral extraction and review requests for additional designations for conformity with the General Plan and the ARM Plan.

Policy RC-11b: Review projects for environmental impact and land use conflicts and consider the following minimum factors when approving mining permits: topsoil salvage, vegetation, fisheries and wildlife impacts, noise, erosion control, roadway conditions and capacities, reclamation and bonding, air quality, energy consumption, engineering and geological surveys, aggregate supply and replenishment, drainage, and the need for economical aggregate materials.

Policy RC-11c: Review projects which are on or near sites designated “Mineral Resources” in the ARM Plan for compatibility with future mineral extraction.

General Plan Land Use Designations

Table 3.13-1 shows the land use designations for the proposed gravel bars. The primary General Plan land use designations associated with aggregate operations include RRD and LIA. The RRD district applies to instream sites and allows very low-density residential development, recreational uses, and resource-related uses where compatible with available public services (Sonoma County 1994). The LIA designation applies to some instream sites, and is intended to protect lands best suited for permanent agricultural uses and capable of relatively high percapita production. Intensive agricultural lands include vineyards, orchards, truck farms, and other high-value agriculture.

Sonoma County Zoning Ordinance/County Code Chapter 26

Table 3.13-1 shows the zoning designations for the proposed gravel bars. A description of each zoning designation is summarized below.

Article 04—Land Intensive Agricultural District (LIA)

The purpose of the Land Intensive Agricultural District is to enhance and protect lands best suited for permanent agricultural use and capable of relatively high production per acre of land. Uses permitted by this article include the raising, feeding, maintaining and breeding of farm animals, agricultural cultivation, residential uses, and a variety of agricultural-related activities. Nonagricultural uses may be permitted if the applicant can demonstrate that the use meets a local need and avoids conflict with agricultural activities. Section 26-04-020 specifies that other nonresidential uses that, in the opinion of the planning director, are of a similar and compatible nature to those uses described in this section may be allowed with a use permit.

Article 10—Resources and Rural Development (RRD)

The purpose of the Resources and Rural Development District is to provide protection of lands needed for commercial timber production, geothermal production, or aggregate resources production; lands needed for protection of watershed, fish and wildlife habitat, biotic resources, and for agricultural production activities that are not subject to all of the policies contained in the agricultural resources element of the County General Plan. The RRD District also allows very low-density residential development and recreational and visitor-serving uses where compatible with resource use and available public services. Section 26-10-020(hh) allows the development of natural resources with appurtenant structures with a use permit if certain conditions are met:

(1) The operation is consistent with the purpose(s) of the resources and rural development district.

(2) The operation involves five (5) acres of land or less.

(3) The operation results in annual production of five thousand (5,000) cubic yards or less.

(4) The quarry does not include crushing, screening or batching operations.

(5) The operation is subject to payment of fees and other mitigation measures as may be found consistent with the aggregate resources management plan.

(6) The operation must have an approved reclamation plan.

(7) The operation is located at least four (4) miles from the nearest approved source of aggregate materials.

Article 12—Resources and Rural Development (Agricultural Preserve) District (RRDWA)

The Resources and Rural Development (Agricultural Preserve) District allows the care (e.g., raising, feeding, maintaining, and breeding) of certain animals, agricultural cultivation upon approval of a management plan, residential uses, and a variety of other agricultural-related uses, some of which would require compliance with specific conditions and/or application for a use permit. The article does not address mining activities. However, Section 26-12-10(dd) specifies that "Other nonresidential uses which in the opinion of the planning director are of a similar and compatible nature to those uses described in this section" are allowed.

Article 66—Biotic Resources Combining District (BR)

The purpose of the Biotic Resources Combining District is to protect biotic resource communities, including critical habitat areas and riparian corridors, for their habitat and environmental value. Section 26-66-020 identifies the potential need for development of a biotic resource assessment where a project could adversely affect a designated critical habitat area. Section 26-66-030 prohibits certain facilities and activities (e.g., structures, utility lines, parking lots, fill or excavation) within streamside conservation areas unless a waiver is issued by the planning director. Mining operations conducted in accordance with the Sonoma County Surface Mining and Reclamation Ordinance (SMARO) is allowed if the base district with which this district is combined also allows such activities (Section 26-66-030[c][4]).

Article 56—F1 Floodway Combining District (F1)

The purpose of the F1 Floodway Combining District is to provide land use regulations for properties situated in floodways, to safeguard against the effects of bank erosion, channel shifts, increased runoff, or other threats to life and property and to implement the provisions of the County General Plan's Safety Element. This district applies to properties within the floodway as shown on the most recent Federal Emergency Management Agency (FEMA) maps and accompanying report. Section 26-56-020 states that all uses allowed within the base district with which this district is combined shall be permitted subject to the provisions of Section 26-56-03, which provides development standards for floodways.

Article 58—F2 Floodplain Combining District (F2)

The purpose of the Floodplain Combining District is to provide for the protection from hazards and damage that may result from floodwaters for properties situated in floodways; to safeguard against the effects of bank erosion, channel shifts, increased runoff, or other threats to life and property; and to implement the provisions of the County General Plan's Safety Element. This district applies to properties that lie within the 100-year flood hazard area as shown on the most recent FEMA maps and accompanying report. Section 26-58-020 states that all uses allowed within the base district with which this district is combined shall be permitted subject to the provisions of Section 26-56-03, which provides development standards. As described in Section 26-72-020, sand and gravel operations that entail the extraction, stockpiling, processing, and sale of sand, gravel, overburden, and topsoil would require a use permit.

Article 64—Scenic Resources Combining District (SR)

The purpose of the Scenic Resources Combining District is to preserve the visual character and scenic resources of lands in the county. This article provides the development criteria for all structures located within community separators and scenic landscape units and scenic corridors.

Article 67—Valley Oak Habitat Combining District (VOH)

The purpose of the Valley Oak Habitat Combining District is to protect and enhance valley oaks and valley oak woodlands. Section 26-67-020 specifies that all uses permitted within the respective district and with which the VOH district is combined shall be permitted in the VOH district. However, mitigation is required for valley oaks of specific diameters.

Article 72—Mineral Resource Combining District (MR)

The Mineral Resource (MR) Combining District is intended to conserve and protect land that is necessary for future mineral resource production. The MR district is to be applied only where consistent with the ARM Plan and combined with base zoning with the County General Plan's land intensive agriculture, land extensive agriculture, diverse agriculture and resources, and rural development land use categories. The MR zone allows mining with the issuance of a surface mining use permit and the approval of a reclamation plan, but restricts residential and other incompatible uses. The zone's allowed uses supersede those allowed in the applicable base district.

Article 76—Second Unit Exclusion Combining District (Z)

The purpose of the Second Unit Exclusion Combining District is to provide the exclusion of second units under certain circumstances. Section 26-76-01 specifies that all uses permitted in the respective district with which the Z district is combined shall be permitted in the Z district, except for the establishment, placement or construction of a second unit otherwise authorized by Section 26-92-040, "Hearings—Appeals of administrative decisions—Questions on permitted uses."

Article 78—B Combining Districts

The B Combining Districts are intended to specify residential density and/or minimum parcel or lot size for a particular parcel, lot, or area. For B6, the adopted zoning maps shall specify the maximum permitted density, determined by gross acreage for all residential uses. Minimum front, side, and rear yard requirements and the minimum parcel or lot size, if not otherwise specified, shall conform to the base district with which the B6 district is combined, unless specifically approved otherwise by the Planning Commission.

Aggregate Resources Management Plan

The ARM Plan's stated purpose is to meet future aggregate needs using the resources that are available or could be developed in the county while regulating production from both terrace and instream sources to avoid or minimize significant impacts and promote the efficient use of the resource. Originally adopted in 1980, the ARM Plan was updated by Sonoma County in 1994. The ARM Plan is consistent with SMARA and state mineral resource management policies. The ARM Plan contains nine objectives, four of which are pertinent to land use in the proposed instream mining project, as listed below:

- *Objective 4:* Manage instream resources on a sustained yield basis for high quality uses in a manner which reduces bank erosion, maintains flood flow capacities, protects adjacent uses, and minimizes impacts on fisheries, vegetation, and wildlife.
- *Objective 5:* Continue and expand monitoring programs so that more information is available for future decisions about terrace and instream impacts and alternative management policies and approaches.
- *Objective 6:* Reevaluate gravel extraction methods and production periodically to assess options which would further reduce environmental impacts and land use conflicts or better meet the County's aggregate needs.
- *Objective 9:* Encourage the retention of locally produced aggregate for use within Sonoma County.

The ARM Plan included the Instream Management Program, which aims to protect habitat for fisheries and wildlife, adjacent land uses, and the groundwater characteristics of the adjacent terraces. Instream aggregate extraction may be permitted in four resource and agricultural General Plan land use categories: RRD, DA, LIA, and LEA. All instream operations require a use permit, submittal of a reclamation plan, and environmental review. Multiyear instream operations are allowed only in designated portions of the county, including land within the study area, the Alexander Valley reach of the Russian River. New permits in designated instream areas will have a stated time limit of up to 10 years and require approval of MR overlay zoning. The permit term for an instream mining operation may be set longer than 5 years only where there have been no substantial violations of operating standards by the applicant on the site or adjacent sites within the past 5 years.

In addition, the Instream Management Program specifies standards for gravel bar skimming in the designated sections of the Russian River, to reduce overall extraction to more closely match the estimated recharge of gravel and maintain a distinct, nonbraided low-flow channel. Each applicant for an instream mining permit shall submit a study prepared by qualified County-approved expert(s) to identify "all land uses along the river banks, including mining activities or operations, within the assessed areas, any erosion to outer banks which has occurred in the last five years, and the potential for future erosion."

In addition, the ARM Plan contains a number of specific County requirements for mining and reclamation activities, which are applicable to all quarry, instream, and terrace operations. These standards apply to all aggregate operations and related activities conducted in unincorporated portions of the county pursuant to approved mining permits and reclamation plans. Tables 3.13-2a through 3.13-2c at the end of this section identify Countywide standards, Instream Management Program standards, and SMARO standards related to instream mining.

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

- physically divide an established community;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- conflict with any applicable habitat conservation plan or natural community conservation plan;
- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use;
- conflict with existing zoning for agricultural use or a Williamson Act contract;
- involve other changes in the existing environment that, because of their location or nature, could result in conversion of Farmland to nonagricultural uses;

- displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

PROJECT IMPACTS

Findings in the ARM Plan PEIR

Potential land use impacts were evaluated in Section 8.7, "Land Use," of the ARM Plan PEIR. The ARM Plan PEIR did not identify any impacts relevant to the criteria above for instream mining.

Project Impacts

The project would allow for commercial extraction of aggregate from specified gravel bars along a 6.5-mile reach of the Russian River that passes through a primarily agricultural, mostly undeveloped area. The potential project impacts are evaluated here against the baseline of an undisturbed site. As discussed in detail below, the project would not result in any significant impacts on current or projected land use activities.

The project would not divide a community, as it would occur within an established river and riparian corridor. There is no adopted habitat conservation plan or natural community conservation plan for the study area. Further, the project would not displace either people or buildings used for housing. Therefore, this analysis of project impacts is limited to a discussion of the potential for farmland conversion, including conflicts with the Williamson Act and conflicts with applicable land use plans, policies, and regulations.

Impact 3.13-1 The project would not result in the conversion of farmland, nor would it conflict with existing zoning for agricultural use. Mining activities would occur on Williamson Act–contracted parcels, but would not conflict with the Williamson Act contracts.

The study area is surrounded by farmlands, as shown in Figures 1-2 through 1-4 and 3.13-1. Neither the gravel bars within the riverbed nor the riparian corridor adjacent to the river bed are used for commercial agriculture. Excavation activities and associated operations (e.g., placement of temporary bridges) would occur primarily within the proposed gravel bars for all proposed skimming methods. In the case of the REP activities, excavation would occur adjacent to the river, above the top of bank, but would not occur within lands currently used for agriculture. Mining activities at Bars SD-1, S-4, SD-4, and SD-5 would occur within contracted Williamson Act parcels. As described in Section B, "Regulatory Framework," the Instream Management Program of the ARM Plan allows instream operations on Williamson Act–contracted lands if mining and processing take place on lands not suitable for agriculture. The SMARO also permits mining if certain criteria are met, including conditions that instream operations (extraction and processing) are limited to lands not suitable for agriculture and such sites are rezoned to the MR district. Because all of the parcels proposed for mining have the MR overlay and are not located on lands suitable for agriculture, mining-related activities occurring within contracted Williamson Act parcels would not conflict with existing Williamson Act contracts.

Staging would occur on adjacent terraces, also in areas absent agricultural production but that may occur within contracted Williamson Act parcels. Hauling activities associated with mining operations would utilize existing roads through surrounding farmlands, some of which are designated Prime Farmland (and also likely considered contracted Williamson Act parcels). Truck traffic would be confined to these internal roads and would not result in any changes to existing agricultural uses. Syar would enter into agreements with private landowners to minimize any short-term impacts based on increased road use from aggregate hauling activities. Mining activities would overlap with wine-harvesting operations during the fall season (typically, grapes are harvested during the evening hours). Because the project would not mine within agricultural lands and other mining-related activities would be constrained in areas absent agricultural production, the project would not result in the conversion of any Prime, Unique, or Statewide Important Farmlands.

For the reasons described above, the project would have a less-than-significant impact on agricultural land uses and would not conflict with existing zoning for agricultural use or Williamson Act contracts.

Mitigation Measures

None

Impact 3.13-2 The project appears to be consistent with applicable land use plans, except as it relates to noise generated from on site mining equipment and mining-related haul trucks. In these areas, the project appears to conflict with SMARO and ARM Plan standards.

The project would assist in meeting the County's need for aggregate. The ARM Plan contains nine objectives, four of which are pertinent to the project. The project appears to be consistent with these objectives, as described below.

- *Objective 4:* The project would be consistent with this objective, which requires management of instream resources on a sustained-yield basis in a manner that reduces bank erosion, maintains flood flow capacities, protects adjacent uses, and minimizes impacts on fisheries, vegetation, and wildlife. As described in Chapter 1, "Introduction and Project Description," the cornerstone of the proposed project is the adaptive management strategy (AMS). The AMS provides a framework for adjusting management decisions depending on the prevailing physical and biological conditions before the start of the mining season, and allows the lessons learned from earlier phases of mining to be incorporated into subsequent phases. As such, the AMS, with the supplemental mitigation measures identified in this EIR, would ensure a sustained yield of aggregate while ensuring the reduction of bank erosion, maintenance of flood flow capacities, protection of adjacent uses, and minimization of impacts on biological resources.
- *Objective 5:* The project would be consistent with this objective, which refers to monitoring programs to develop future decisions about instream impacts and alternative management policies and approaches. As described above, the proposed AMS, with the supplemental mitigation measures proposed in this EIR, would provide a framework for adjusting management decisions to reflect the prevailing physical and biological conditions prior to the start of the mining season.
- *Objective 6:* The project would be consistent with this objective, which refers to reevaluating gravel extraction methods to reduce environmental impacts and land use

impacts. The intention of the AMS is to produce a sustainable yield of aggregate while simultaneously implementing other objectives of the ARM Plan.

- *Objective 9:* The project would be consistent with this objective, which encourages the retention of locally produced aggregate, because the project would be a source for aggregate within Sonoma County. The ARM Plan designates the Alexander Valley reach of the Russian River as a source for instream aggregate resources. The project is contained within a 17-mile stretch of the Russian River (from the mouth of Big Sulphur Creek to Jimtown Bridge), which includes an estimated 1,190 acres of gravel bars and 20.7 to 27.7 million tons of aggregate.

The gravel bars proposed for mining are located on lands that have base zoning of RRD and LIA (see Table 3.13-1). According to the ARM Plan, instream mining is permitted in four resource and agricultural land use categories included in the County General Plan, including RRD and LIA. The proposed gravel bars are also designated with a combining district of MR. As described in the regulatory section, the MR Combining District is intended to conserve and protect land that is necessary for future mineral resource production. The MR district is applied only where consistent with the ARM Plan. The MR zone allows mining with the issuance of a surface mining use permit and the approval of a reclamation plan. As such, the implementation of the proposed project appears consistent with the County General Plan and zoning land use designations.

Each section of Chapter 3 provides a discussion of consistency with the ARM Plan and SMARO to determine the project's environmental impacts. A discussion of the project's overall consistency with the ARM Plan and SMARO standards and requirements is provided in this section. Specifically, Tables 3.13-2a through 3.13-2c at the end of this section identify the SMARO (and corresponding ARM Plan) standards relevant to the project, and provide a discussion of the project's relationship to these standards from an environmental perspective. As discussed in Tables 3.13-2a through 3.13-2c, the project as proposed, with mitigation measures identified in this EIR that would be included as conditions of approval, appears mostly consistent with the SMARO and ARM Plan standards. The following inconsistencies were identified (also described in Chapter 1):

- The project would extend the use permit to 15 years, compared with the 10 years identified in the ARM Plan.
- The proposed methods would mine the upstream portion of each gravel bar in the Russian River, thus requiring a study to show it is the best management approach for a particular site.
- The horseshoe and EDSH mining methods would allow mining below a 2% minimum cross section slope from the summer low-flow water level.
- The project incorporates the AMS, which would provide flexibility in the mining methods to ensure a sustainable production of aggregate and benefit aquatic and riparian resources.
- The REP activities, primarily the benching methods, would conflict with the high-bank setback of 30 feet or 2.5 times the height of the high bank, whichever is greater.
- The project proposes the use of the Digital Elevation Model (DEM) and thalweg surveys as replacements for cross sections at 400-foot intervals.

- The project would generate emissions in excess of Northern Sonoma County Air Pollution Control District (NSCAPCD) standards for dust, specifically PM_{10} exceeding 15 tpy.
- The project would generate traffic problems (decrease LOS) from haul truck activities in excess of standards identified in the Sonoma County Traffic Study Guidelines
- The project would generate noise levels from on-site equipment operation, haul truck traffic on public and private roads in excess of standards identified in the County General Plan.

The project would require an amendment to the ARM Plan to allow a 15-year use permit for mining activities. This amendment would eliminate the project's inconsistencies with Section 7.5.1 of the ARM Plan and Section 26A-09-020(a) of the SMARO as it relates to time frames for instream mining.

The project would also require an amendment to deviate from the provisions of the ARM Plan's proposed methods of skimming and strategy. This amendment and the AMS (including the preparation of mining plans and monitoring methods) would eliminate the project's inconsistencies with Section 7.5 of the ARM Plan and Section 26A-09-020 of the SMARO.

The proposed techniques would mine the upstream half of each gravel bar, which is considered inconsistent with Section 26A-09-020(j) of the SMARO and the ARM Plan. The requirement for leaving the upstream half of a gravel bar intact may be modified or waived only where the results of the above-described study demonstrate to the satisfaction of the County that (1) the recommended mining methods and management practices are the best management approach for the site and adjacent streambanks that are potentially affected within the assessed areas, and (2) taken together with the other mitigation required by the ARM Plan, these methods and practices would reduce certain potential environmental impacts identified in the ARM Plan PEIR (related to bank erosion, the geomorphology of the low-flow channel, fish, and habitat loss).

This EIR, in conjunction with annual mining plans approved by the resource agencies, would fulfill the requirements of the study. This EIR evaluates potential impacts related to bank erosion, geomorphology of the low-flow channel, and fish and habitat loss. Where potential impacts would be potentially significant, supplemental mitigation measures to the AMS have been identified. In addition, the annual mining plans provide additional, site-specific review of the proposed mining techniques on specific gravel bars to be mined. The mining plans, which integrate the findings of topographic surveys and monitoring results from previous mining activities, must be approved by the resource agencies before mining operations. Where potentially adverse impacts are anticipated for the issue areas identified above, mining would be adjusted accordingly. As such, implementation of the AMS with the supplemental mitigation measures and approval of the annual mining plans would ensure that the project would not conflict with this requirement of the ARM Plan and the SMARO.

The project proposes mining methods (e.g., horseshoe skim and effective discharge stage height) and a strategy for determining the amount of extraction and monitoring (the AMS) that would be inconsistent with the ARM Plan for instream mining. However, the intent of these techniques and strategy is to meet the overall objectives of the ARM Plan, including the reduction of bank erosion, maintenance of flood flow capacities, protection of adjacent uses, removal of invasive vegetation, and enhancement of fish habitat and riparian natural communities along the Russian River. Although the specific techniques and strategy proposed by the project appear to be inconsistent with the ARM Plan, the project appears to be consistent with overall intent of the ARM Plan (as described above).

The project would generate significant and unavoidable noise impacts associated with mining and reclamation operations. The ARM Plan states that the maximum acceptable noise levels for all aggregate operations shall be as set forth in the noise element of the general plan.

All of the project's potential environmental effects are addressed in their respective sections of this EIR. Mitigation measures identified in this EIR would minimize and mitigate adverse environmental effects of the project to the extent feasible.

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Table 3.13-2A
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-010. General Standards for Mining Permit and Operations	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(a) Use permits for surface mining shall not be approved on a parcel if the mining activity is not consistent with the zoning ordinance provisions set forth in Chapter 26 of County Code. To be considered consistent with the Zoning Ordinance, the proposed mining sites must be 1) within a base zoning district where mining is permitted with a use permit, or 2) an area zoned with the "MR" (Mineral Resource) combining district consistent with ARM Plan policies…	–	The proposed bars are located within a "Resources and Rural Development" (RRD) and "Land Intensive Agriculture" (LIA) base zoning district with a "Mineral Resource" (MR) combining district overlay. The MR zone allows mining with the issuance of a surface mining use permit and the approval of a reclamation plan.
(b) Off Street Parking. Adequate off-street parking shall be provided to accommodate the expected use from employees, customers, and equipment.	*Section 7.3, Countywide Requirements, Operating Standard No. 7*	No on-street parking would occur. Syar would stage unused equipment and worker vehicles on the terrace above the gravel bars. Haul trucks would be parked at the Healdsburg processing plant and office at the end of each day.
(c) *Roads and Traffic*. All mining operations shall be conducted in such a manner as to minimize the adverse impacts of aggregate truck traffic on roads, traffic circulation, traffic congestion, and traffic safety. Mining operations shall comply with the following standards:		
1) *Access Roads*. All private roads or driveways providing access to a mining site shall be adequately managed to prevent aggregate or other materials being drawn onto the public roads and rights-of-ways. Management techniques may include surfacing approach ways, installing tire grates, avoidance of over-filling and overwatering, covering loads, regular sweeping or washing of roadway and shoulders, and spill clean-up response.	*Section 7.3, Countywide Requirements, Operating Standards No. 6*	Syar would comply with all SMARO requirements for preventing aggregate materials from being deposited on the public roadway. Standard conditions of approval specify frequency of street sweeping, and whether paving or wheel grates are required, among others.

Table 3.13-2A
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-010. General Standards for Mining Permit and Operations	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
2) All surface mining operations permitted pursuant to this chapter shall be required to pay an annual traffic mitigation fee to the Sonoma County Department of Transportation and Public Works, pursuant to Chapter 26-98 of this code, to mitigate the traffic and circulation impacts the operation's truck traffic will have on the county road network by paying a fair share of the costs for safety and circulation improvements.	*Section 7.3 Countywide Requirements, Operating Standards No. 11*	Mitigation Measure 3.6-4a would require Syar enter into a Roadway Maintenance Agreement with Sonoma County providing its proportionate share of the responsibility to maintain the proposed haul roads.
3) *Encroachment Permit.* The construction and/or upgrade of driveways or other alterations within the public right-of-way are required to obtain encroachment permits from the County or Caltrans or have such requirement waived, prior to commencement of activities in the public right-of-way.	*Section 7.3 Countywide Requirements, Operating Standards No. 14*	Syar shall obtain all required encroachment permits.
4) *Traffic Signs and Traffic Management Facilities*. Traffic warning signs, bicycle lanes, acceleration-deceleration lanes, turning lanes or other traffic management facilities shall be placed by the operator at appropriate locations as determined by either the State Department of Transportation or the Sonoma County department of public works.	–	Syar would post private traffic signs to define the haul routes and to establish appropriate speed limits (15 mph) for safety.
5) *Public Road Maintenance*. Where public roads are used to access the mining site, provisions may be required in the mining permit and/or reclamation plan for the upgrading of such roads to a standard capable of accommodating the additional weight of trucks and minimizing traffic hazards. Such provisions, if required, shall meet the approval of either the State Department of Transportation or the Sonoma County Department of Public Works.	*Section 7.3 Countywide Requirements, Operating Standards No. 11*	Public haul roads would be used to transport aggregate materials from the proposed gravel bars to the aggregate processing plant in Healdsburg. To ensure traffic safety associated with sight distances, improvements to existing intersections would be required as part of Mitigation Measures 3.6-3a through 3.6-3d. Roadway improvements to accommodate truck weight are found in Mitigation Measures 3.6-4a-c and 3.6-5.

Table 3.13-2A
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-010. General Standards for Mining Permit and Operations	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
6) All surface mining operations permitted pursuant to this chapter shall be required to pay an annual road mitigation fee to the Sonoma County Department of Transportation and Public Works to mitigate the wear and tear the operation's truck traffic will have on the county roads used as a haul routes by paying a fair share of the maintenance and improvement costs. The amount of the fee shall be determined by the Department of Transportation and Public Works on a case-by-case basis.	*Section 7.3 Countywide Requirements, Operating Standards No. 11*	Mitigation Measure 3.6-4a would require Syar enter into a Roadway Maintenance Agreement with Sonoma County providing its proportionate share of the responsibility to maintain the proposed haul roads.
7) All operators shall be required to develop a truck driver education program which includes posting details on preferred haul routes and informing drivers of procedures established to reduce public conflicts. Operators will also be required to monitor driver compliance and respond to complaints about gravel trucks.	*Section 7.3 Countywide Requirements, Operating Standards No. 5*	Mitigation Measures 3.6-3b and 3.6-6b would require Syar to develop a truck driver education program that includes posting details on preferred haul routes and informing drivers of procedures established to reduce public conflicts. Syar shall be required to monitor driver compliance and respond to any complaints about gravel trucks operations.
8) All roads to be used for site access should have sufficient width, shoulders, pavement strength, and other features necessary to adequately mitigate the traffic impacts of proposed operations. Public access roads shall meet the design requirements of the general plan and related standards. Traffic levels on public access roads shall not exceed the acceptable levels identified in the general plan.	*Section 7.3 Countywide Requirements, Operating Standards No. 6*	Mitigation Measures 3.6-3a through 3.6-3d would address inadequate road design issues of existing intersections and roadways to improve safety. These mitigations would require Syar to upgrade and improve specific intersections. Mitigation Measure 3.6-1 would restrict project traffic to assure the acceptable levels of traffic are not exceeded.

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Sec. 26A-09-010. General Standards for Mining Permit and Operations	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
d) *Stormwater Runoff, Flood Control and Water Quality*. All operations shall manage earthwork and processing activities in such a manner as to minimize: ponding or accumulation of storm water not necessary for silt control, alterations to the natural drainage system, and siltation of adjacent or downstream watercourses.	*Section 7.3, Countywide Requirements, Operating Standards No. 4*	Syar would manage drainage within the skimmed areas by grading the skimmed floors to a smooth slope. Syar would also implement best management practices (BMPs) to minimize erosion. BMPs include straw wattles and willow stakes. In addition, the project proposes transplanting vegetation from the skimming areas to the heads of bars, high bank setback, and areas of giant reed removal, and revegetation following mining activities.
1) All operations shall incorporate the "best management practices" into the storm water pollution prevention plan required by the RWQCB.		The project proposes the implementation of BMPs to minimize erosion. The State Water Resources Control Board (SWRCB) has issued a general National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges associated with industrial and construction activities statewide; this permit is enforced in Sonoma County by the North Coast Regional Water Quality Control Board (North Coast RWQCB). The general permit requires development and implementation of storm water pollution prevention plans (SWPPP) emphasizing BMPs to control both erosion and sedimentation. Because instream mining occurs during summer, stormwater is not a significant concern. However, measures should be taken to minimize flux of sand and silt into the river stream as a result of skimming operations. Mitigation Measures 3.2-12a-h and 3.2-14a-h would require supplemental mitigation

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		measures to reduce erosion, sedimentation, and turbidity to protect water quality.
2) Operations along stream channels shall obtain the appropriate permits and comply with the requirements of this code, including Ordinance 3836R, the Sonoma County Water Agency, the Regional Water Quality Control Board, the California Department of Fish and Game (CDFG), the State Lands Commission, and/or the Army Corps of Engineers as applicable. Any of the drainage alterations, ponding or filling activities listed below shall be expressly prohibited unless approved by the applicable agencies before commencing operations.		Annual mining plans must be approved by resource agencies, including the California Department of Fish and Game (DFG), National Marine Fisheries Service (NMFS), U.S. Army Corps of Engineers (USACE), and the North Coast RWQCB prior to mining operations. In addition, relevant permits would be required from the aforementioned agencies.
e) *Water Quality.* In order to avoid and prevent contamination or degradation of surface or ground waters, all operations shall comply with the following standards:	*Section 7.3, Countywide Requirements - Operating Standards No. 4, and Reclamation Standards*	
1) Any waters discharged from the site to adjacent lands, streams, or bodies of water or to any groundwater body shall meet all applicable water quality standards of the Regional Water Quality Control Board and any other agency with authority over such discharges. Records of any water quality monitoring conducted in conjunction with the requirements of such agency or agencies shall be made available to the director on request. Discharges of sediment laden water to designated on-site settling ponds, desilting basins in or reclamation areas shall not be deemed to be in violation of this part solely on the basis of sediment content.		All surface drainage within the site of skimming operation would flow back into the Russian River or percolate into the gravel and sand deposits. Dewatering would not occur as part of instream mining activities

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2) Excavations which may penetrate near or into usable water bearing strata shall not subject such groundwater basin or subbasin to pollution or contamination.		No fueling of equipment and vehicles would occur on the proposed bars. Fueling of the equipment except the haul trucks would occur on terraces (outside top of bank) away from the river. Syar would fuel the haul trucks at its processing plant in Healdsburg or at off-site fueling stations. Regular maintenance, lubrication, and fueling would occur at the job site (outside top of bank); major equipment repairs would occur at the processing plant. Syar would implement its spill Spill Prevention Fueling and Lubrication (SPFL) plan in the event of an emergency spill.
f) *Hazardous Materials.* All operations shall manage hazardous materials and hazardous wastes in compliance with the requirements of the Uniform Fire Code, the Uniform Building Code, the county public health department, local fire protection agencies, the Regional Water Quality Control Board, the California EPA and either the Northern Sonoma County air pollution control district or the Bay Area Air Quality Management District as applicable. Hazardous materials and wastes are to be removed from all mining areas within the 100-year flood plain by November 1st of each year. Each mining site where hazardous materials are used or hazardous wastes are stored is required to have a spill prevention and countermeasure plan.	*Section 7.3, Countywide Requirements, Operating Standards No. 8.*	The existing SPFL would be updated and implemented as part of Mitigation Measure 3.11-1. The measure would require that specific high-risk issue areas be addressed by the SPFL. Mining operations shall not commence until a SPFL is approved by the County Environmental Health Department's Hazardous Materials Division.

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g) *Erosion and Sedimentation.* 1) During the period mining operations are being conducted, and prior to final reclamation of mined lands, measures shall be taken to prevent erosion of adjacent lands from waters discharged from the site of mining operations or the offsite discharge of sediment. In addition, the mining operator shall be responsible for, and take whatever steps are necessary to prevent the erosion of lands adjacent to the district boundary into the excavated area. Such measures may include the construction of properly designed retarding basins, settling ponds and other water treatment facilities, ditches, diking and revegetation of slopes. Settling ponds and other water treatment facilities shall be located and managed so that accumulated sediment will not enter any stream or groundwater body unless such discharge is in accordance with the storm water pollution prevention plan (SWPPP) and best management practices (BMP's) approved by the RWQCB pursuant to subsection (d) of this section.	*Section 7.3, Countywide Requirements – Operating Standards No. 4, and Reclamation Standards*	Please refer to Section 26A-09-010(d) above regarding BMPs and SWPPP. BMPs include straw wattles and willow stakes. Mitigation Measures 3.2-12a-h and 3.2-14a-h would require supplemental mitigation measures to reduce erosion, sedimentation, and turbidity to protect water quality. In addition, Syar would maintain a setback of 30 feet or 2.5 times the slope height, whichever is greater, from the outer river bank (top of bank) to the interior edge of skimming areas. The alignment of the summer low-flow channel of the Russian River would be protected by retaining a buffer at the end of each bar, as well as a buffer along the outer edge of each bar along the low-flow channel measuring approximately 20% of channel width. Syar would strengthen the buffer area at the upper end of each bar by transplanting riparian vegetation removed from the skimmed areas. For the benching methods, Syar would skim gravel from the floodplain adjacent to the channel to a depth below bankfull elevation so that backwatering and fine sediment deposition could occur during winter high flows. Syar would establish variable slope ratios between 3:1 and 10:1 along the perimeter of the skimmed area. The skimmed floor would have a downstream gradient matching that of the river and a 0.5% cross slope. Syar would conduct bar skimming in the dry season from June 1 to November 1, outside the wetted

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		stream and above the summer low-flow level of the Russian River, thus limiting erosion potential. See also mitigation measures in the Sections 3.2, “Hydrology and Water Quality”, 3.3, “Vegetation and Wildlife”, and 3.4, “Fisheries Resources”.
2) Sediment basins, settling ponds, ditches, levees, dikes, culverts and other structures as well as erosion control and streambank protection measures shall be sized and designed by a civil engineer in accordance with standards set forth in the most current “flood control design criteria” manual published by the Sonoma County water agency and otherwise in accordance with acceptable engineering practices and any subsequent local, state, or federal regulations or revisions. An erosion and sediment control plan, including supporting calculations and diagrams, shall be prepared by a civil engineer or certified erosion and sediment control specialist and submitted for review with new mining or reclamation applications. Erosion and sediment control plans shall be designed in accordance with the most current “Erosion and Sediment Field Manual” published by the Regional Water Quality Control Board.		The project would not require sediment basins, settling ponds, ditches, levees, dikes, culverts, and other similar structures. As described above, Syar would maintain setbacks and buffers.
3) Grades in areas being mined shall be maintained so as to avoid accumulations of water that could serve as breeding areas for mosquitoes or as sites of fish entrapment.		Syar would manage drainage within the skimmed areas by grading the skimmed floors to a smooth slope, thus avoiding accumulation of water that would serve as breeding area for mosquitoes. The various skimming and enhancement methods would have specific slope requirements that reduce ponding and stranding of fish.

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i) *Noise Control*. The maximum acceptable noise levels for all aggregate operations shall be as set forth in the noise element of the general plan. More stringent noise standards may be required as permit conditions when particular local circumstances warrant additional protection of potentially affected areas. Any noise control measures prescribed as condition of a permit shall in no manner be interpreted as to preclude the application to the surface mining site of future noise control measures adopted by the County subsequent to the granting of the permit.	*Section 7.3, Countywide Requirements, Operating Standards No. 2*	As discussed in Section 3.9, noise generated during mining and reclamation operations, including from mining equipment on the proposed bars, and haul truck traffic associated with mining operations would result in noise levels exceeding the applicable County criteria if mitigation measures as identified in Section 3 were not utilized. The noise generated by this project thus appears inconsistent with this requirement if mitigation measures are not carried out.
j) *Hours of Operation*. Unless otherwise provided by conditions of the permit, the permit granted hereunder shall authorize operations of mining, processing, and related activities as follows: 1) Monday through Friday: 6:00 a.m. through 10:00 p.m.; 2) Saturday: 6:00 a.m. until 4:30 p.m.; 3) Sundays and national holidays: no mining or processing unless authorized as a condition of the permit; 4) Exceptions to these time limitations may be authorized by the director upon written request of the operator in conjunction with special contracts or other circumstances which require unusual hours of operation; (5) In the event of emergencies involving catastrophe, or threat to public safety or property, these time limitations shall not apply; (6) These time limitations shall not apply to the normal activities relating to maintenance of stationary or mobile equipment and delivery of supplies.	*Section 7.3, Countywide Requirements, Operating Standards No. 1* *Section 7.5.2, Instream Management Program, Operating Standards: "No instream mining operations will be allowed on Saturday, Sunday, or Federal holidays, but processing may be allowed on Saturdays outside the ordinary high water mark."*	The proposed permitted hours of operation would be weekdays, 6:00 a.m. to 9:30 p.m. No operations would occur on Saturdays, Sundays, or national holidays.

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k) *Fencing, Posting and Security*. All operations shall take all reasonable measures necessary to ensure the security of the site, protect the public, and prevent trespassing. The applicant shall show on the plans the location of all fences, signs warning of the mining operations, and other site hazard protection or equipment necessary to provide adequate public protection. Additional hazard protection may be required by the director. Gates, lighting, site patrol or other measures may also be required by the director in order to ensure the security of the mining site and any private access routes thereto. Fencing height, type, and location and the standards for other hazard protection equipment shall also be subject to the approval of the director.	*Section 7.3, Countywide Requirements, Operating Standards No. 3*	The primary access to the gravel bars would be via private farm roads (haul routes) from public roadways. All of the farm property is posted as private property. An alternative access to the proposed gravel bars is from the Russian River. However, only boaters passing through the area are expected in these areas. Mitigation Measure 3.14-2 would require Syar to install fencing, post warning signs, provide site patrol, and take other actions necessary to ensure the security of the active mining site and associated work equipment storage areas and control private access to those areas.
l) *Sight Regulations*. Provisions shall be made where practical for buffering, berming, and visual screening between the operation and an adjacent public street right-of-way, public uses such as schools, parks, golf courses, and other such public uses determined to be visually sensitive by the county. Special provisions for screening may be required for operations in designated scenic areas or within three hundred feet (300') of a designated scenic corridor. The height and type of such screening shall be set by the permit.	*Section 7.5.2, Instream Management Program, Operating Standards: "Stockpiles on gravel bars shall not be visible from designated scenic highways. Stockpile areas shall be specified in the use permit and shall minimize disruption of riparian cover; Stockpiles and all mining related equipment shall be*	Portions of the study area are designated a scenic landscape unit and included in the County-designated scenic corridor. As described in Section 3.8, mining activity would be inevident to dominant, as views of the riverbed are intermittent throughout the study area. Unobstructed views are available from State Route (SR) 128/Geyserville Bridge (which includes a separate pedestrian walkway on the north side), a segment of southbound U.S. Highway 101 (U.S. 101) and occasional locations in the eastern hills. The project thus appears inconsistent with this requirement. Mining activity on Bar S-8, south of the bridge, would occur within 300 feet of the scenic corridor. As described in Section 3.8, "Aesthetics," all mining activity would be temporary in nature (no permanent structures would be built) and visible for only a

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	removed from within the ordinary high water channel by November 1 of each year."	limited duration from the roadway. Mining activity at Bar S-8 within 300 feet of a scenic corridor would cause a significant, but temporary impact on a scenic vista. The placement of screening may be a visual barrier that obstructs the expansive view of the river, such that it would contrast substantially with the riverbed's existing overall form, line, color, or texture; the screening would be considered more obtrusive to the visual landscape and as such is not proposed as a mitigation measure.
(m) Slopes and Benches. (1) Finished slopes shall conform to the requirements of Section 26A-11-010 (d)(2). In addition, quarries shall be subject to the applicable slope standards set forth in Section 26A-11-040; terrace mining to those slope standards set forth in Section 26A-11-030; instream mining sites to those slope standards set forth in Section 26-11-020 of this chapter.		Finished slopes would vary depending on the mining method. For the horseshoe skim, cut slopes along the interior sides of the skimmed area would remain at a 2:1 ratio, while the cut slopes at the upper (upstream) end of the skimmed area would be left at a 10:1 ratio The floor of the skimmed area would be established at 1 foot above the summer low-flow river level, with the downstream gradient equal to the river level. For both the alcove and oxbow, the cut slopes would be similar to the horseshoe skim. However, alcoves would be extracted to the depth of the summer low-flow water level, and would be open to the low-flow channel on the downstream end to avoid fish stranding. For the oxbow, the floor of the skimmed area would be similar to the horseshoe skim. For the benching method, Syar would skim gravel from the floodplain adjacent to the channel to a

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		depth below bankfull elevation so that backwatering and fine sediment deposition could occur during winter high flows. Syar would establish variable slope ratios between 3:1 and 10:1 along the perimeter of the skimmed area. The skimmed floor would have a downstream gradient matching that of the river and a 0.5% cross slope. For the effective discharge stage height (EDSH) method, Syar would maintain a lateral buffer with a minimum of 50 feet in width along the outer edge of the bar defined by the effective discharge line. Syar would establish cut slopes along the sides of the skimmed area at a 2:1 ratio. In addition, Syar would establish variable slope ratios, between 5:1 and 10:1, at the upper portion of the skimmed area. The floor of the skimmed area would similar to the horseshoe skim. Mitigation Measure 3.1-2 would require review and approval of the grading plan by a certified engineering geologist, a geotechnical engineer, or civil engineer. The project would return the site, including slope and benches to a stable condition through implementation of BMP's, grading, and revegetation according to Section 26A-11, "Reclamation Standards" as described below in Table 3.13-2c. These measures will ensure that the project meets the requirements set forth in this section of the SMARO.

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(2) Temporary slopes steeper than the finished slopes, in areas where finished slopes are to occur, shall be constructed and maintained in accordance with the recommendations, as approved by the director, of a geotechnical engineer or a civil engineer registered in the state of California or an engineering geologist registered and certified in the state of California. Temporary slopes shall not be created or maintained in a manner that will interfere with the construction of finished slopes conforming to subsection (m)(1) of this section, and the geotechnical engineer, civil engineer or engineering geologist shall make specific recommendations for the conservation of such temporary slopes to finished slopes.		The temporary slopes would be similar to those defined above for the finished slope (Section 26A-09-010[m][1]).
(3) Benches shall be provided on any working slope with a vertical elevation in excess of forty feet (40’) unless otherwise recommended, as approved by the director, by a geotechnical engineer or civil engineer registered in the state of California or an engineering geologist registered and certified in the state of California. No benches are required for terrace pit slopes below the minimum water level. The bench interval shall not exceed thirty feet (30') in vertical distance. Benched slopes shall not be created or maintained in a manner which will interfere with the construction of final reclaimed slopes.		Instream mining activities would not require the construction of benches.
(n) Salvage of Topsoil. Where the reclamation plan requires resoiling of finished grade areas or offsite locations, topsoil shall be separately removed and stockpiled during the excavation phases for later use in reclamation. A protective ground cover shall be established on topsoil stockpiles to retard erosion and runoff during the winter rainy season.		Syar would temporarily stockpile topsoil in the areas adjacent to the benching areas. At the end of the operating season, Syar would use the stockpiled soil to resoil the side slopes of the benching areas. Protective ground cover to retard erosion and runoff is not necessary as mining activities would occur during the dry season.

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o) *Air Quality*. All operations shall be conducted in accordance with applicable air pollution control standards as amended over time:	*Section 7.3, Countywide Requirements, Operating Standards Nos. 6, 8 and 9*	The project does not involve a mining "facility" with a stationary source of aggregate materials extraction. Instead, the project consist s of skimming gravel bars that aggrade, shift , and move over time. In addition, as discussed in Section 3.7, estimated annual emissions of project-generated criteria pollutants and precursors (reactive organic gases [ROG], oxides of nitrogen [NO_X], and carbon monoxide [CO]) would not exceed the Northern Sonoma County Air Pollution Control District (NSCAPCD)–recommended standards. The project would not comply with SMARO policy that specifically addresses project-generated dust emissions (including respirable particulate matter less than or equal to 10 microns in diameter [PM_{10}]).
1) Mining facilities having stationary sources of aggregate materials extraction, and/or processing shall comply with all applicable federal, state, and local requirements governing the review, permitting and emission of air quality contaminants. Where applicable such compliance shall include, but not be limited to, Federal New Source Review (NSR), New Source Performance Standards (NSPS), State Air Toxics Control Measures (ACTMs) and any other such local reviews and permit requirements as determined necessary by either Northern Sonoma County Air Pollution Control District (NSCAPCD) or the Bay Area Air Quality Management District (BAAQMD).		
2) Dust Suppression. All haul roads, driveways, and activity areas, including equipment, shall be maintained as necessary to minimize the emission of dust. Maintenance shall be conducted as necessary to prevent fugitive dust from becoming a nuisance to adjacent properties. Maintenance procedures may include but are not limited to watering, oiling, paving and/or application of other appropriate dust suppressants.		Water trucks would spray water along the haul routes to control fugitive dust. Syar would use a motor grader to periodically rework the road surface and incorporate wetted soil into the road bed. Mitigation Measure 3.7-1 would require Syar to implement additional dust control measures, as follows: ▪ Water all active mining areas and haul routes at least twice daily and more often during windy periods (i.e., 10 mph). Active areas adjacent to residences shall be kept damp at all times.

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		▪ Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. ▪ Cover all hauling trucks or maintain at least 2 feet of freeboard. ▪ All vehicle speeds on unpaved roads shall be limited to 15 mph. ▪ Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes. ▪ Apply water at least twice daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas,and staging areas. ▪ Sweep all paved access roads, parking areas, staging areas and streets daily wherever visible soil material is deposited or tracked. All sweeping will be performed with water sweepers. ▪ Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel. ▪ Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles.

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		▪ Where and when feasible, wash off the tires or tracks of all trucks and equipment leaving the site. ▪ Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints.
p) *Cultural Resources*. Whenever there is reason to suspect significant archaeological or paleontological sites within the area proposed for operations, an appropriate survey by qualified professionals shall be required. Site specific protection measures may be required where recommended by a qualified professional after site-specific field studies. The appropriate parties shall be notified if any items of value are identified and the retrieval, review, and preservation measures established by those parties shall be implemented.	*Section 7.3, Countywide Requirements, Operating Standards No. 10*	Mitigation Measures 3.5-1 and 3.5-1b would require Syar to implement a pre-mining worker training for its machine operators and their supervisors. In addition, the mitigation measure provides procedures and actions that must be taken in the event of an accidental find of cultural resources. It should be noted that the contacts identified in Mitigation Measure 8.15-1 of the ARM Plan PEIR have been updated in Mitigation Measures 3.5-1a and 3.51b in this EIR.
q) Night lighting shall be located and designed to minimize off-site glare.	*Section 7.3, Countywide Requirements, Operating Standards No. 15*	Syar would conduct mining operations during daylight hours only (starting from 6 a.m. and ending as late as 9:30 p.m. as daylight allows). No night lighting would be used.

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r) *Compliance with other Agency and Statutory Requirements:* Operations shall obtain any and all permits and approvals required by other agencies having jurisdiction over the mining operations and provide copies to the County. In addition, all aggregate operations shall be conducted in a manner consistent with the applicable requirements imposed by other Federal and State agencies which are charged with enforcing Federal and State laws, including but not limited to, the Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and the Federal Clean Water Act (CWA).	*Section 7.5.2, Instream Management Program, Operating Standards: "All instream mining operations require approval of a streambed alteration agreement with CDFG and a Clean Water Act Section 404 permit from the Corps. All crossings require approval of a County permit according to the requirements of Ordinance 3836R and a Streambed Alteration Agreement from CDFG. Approval by the SLC must be obtained for mining on sovereign lands owned by the State."*	Prior to each mining season, Syar shall obtain any and all permits or approvals required by other agencies having jurisdiction over the project and shall provide copies of these permits to the Sonoma County Permit and Resource Management Department (PRMD). Such agencies may include but are not limited to PRMD, DFG, NMFS, USACE, and the North Coast RWQCB.
(s) The owners and operators of aggregate mining operations and reclamation plans shall be responsible for complying with the requirements of the State Surface Mining and Reclamation Act,		With the exception of specific amendments to the ARM Plan (e.g., duration of mining, mining techniques, adaptive management strategy, REP

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and the Sonoma County ARM Plan, and all applicable chapters of this code including, but not limited to, reimbursement of the operator's fair-share of the county's costs for carrying out the administration, mitigation, and monitoring activities set forth in the ARM Plan.		activities, the use of the Digital Elevation Model [DEM] and thalweg surveys for 400-foot cross sections), the project as proposed would be consistent with the ARM Plan, as evaluated in Chapter 3 of this EIR. Amendment to the ARM Plan and SMARO would ensure compliance.
(t) Williamson Act Compliance. Mining extraction and processing operations and related uses may be conducted on contracted Williamson Act parcels only where consistent with the Williamson Act or where the Williamson Act contract has been rescinded and replaced with an open space easement or other measures as provided below. In addition, such operations and uses either must have established vested rights or legal nonconforming status pursuant to Chapter 26 or 26A of County Code, or all of the following applicable findings can be made: 1) The county determines either: (i) Pursuant to Sections 51238.1 and 51238.2 of the Government Code, that the aggregate mining and/or processing operations are compatible with, or otherwise permissible under, the agricultural, recreational, or open space purposes of the Williamson Act contract; or (ii) The Williamson Act contract has been properly rescinded and replaced with an open space easement or other appropriate measures have been taken. (2) The proposed reclamation is in compliance with reclamation standards specified in Section 2773 of SMARA and Title 14, Division 2, Chapter 8, Subchapter 1, Article 9 of the California Code of Regulations.		Mining activities would occur on parcels with Williamson Act contracts. As described in Section 3.13, all of the parcels where mining activities would occur have an MR overlay, which permits such activities. Additionally, the project is an instream mining project consistent with (t)(4) as all activities will take place within the Russian River on lands not suitable for agriculture.

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Sec. 26A-09-010. General Standards for Mining Permit and Operations	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(3) Quarry sites must be reclaimed to an agricultural use as soon as mining has ceased and ancillary uses do not continue beyond the mining. (4) Instream operations are limited to extraction and processing and take place only on lands not suitable for agriculture. (5) Terrace mining sites are reclaimed to plant crops within three (3) years after the beginning of mining operations or, prior to the commencement of mining, the Williamson Act contract on a terrace mine site is canceled or rescinded and replaced with an open space easement pursuant to Government Code Section 51255 or substantially equivalent measures, such as an agricultural conservation agreement over other land pursuant to Government Code Section 51256. (6) The site is rezoned through the “mineral resource” (MR) district.		
(u) County Code. All mining and related operations shall comply with all applicable building and health code regulations and permit requirements unless such activities are provided a codified exemption and the director or their designee determines such activities are exempt.		The project would comply with all applicable regulations.
v) *Wildlife habitat impacts*: If valuable wildlife habitat would be affected by a mining operation, avoidance, replacement or other mitigation will be required to reduce habitat impacts to a less than significant level.	–	As discussed in Section 3.3 “Vegetation and Wildlife” Section 3.4 “Fisheries Resources,” the project would not result in a significant impact on any wildlife habitat.

Table 3.13-2B
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
a) Permit Time-Frames. A mining permit for instream operations in a designated area shall be granted for a period not to exceed ten (10) years, at the end of which time it shall expire; provided, however, that no such permit shall be granted for a period of more than five (5) years if there have been significant violations of operating standards by the applicant on the mining site or adjacent mining sites within the past five (5) years. All mining permits for instream operations in designated areas shall be subject to annual adjustment by the director in the amount of materials which can be extracted from the mining site based on data obtained through the monitoring program established by the aggregate resources management plan. A mining permit for instream operations in a non-designated area shall be granted for a period not to exceed one (1) year, at the end of which time it shall expire; provided however, that no such permit shall be granted which would result in extraction more than once in three (3) calendar years at any mining site.	*Section 7.5.1, Instream Management Program, Location and Approval: "Multi-year instream operations are allowed only in designated portions of the Alexander Valley Reach of the Russian River… Designations are based upon natural characteristics, previous mining activities, ownership, access, and adjacent land use…* *New permits in designated instream areas will have a stated time limit of up to ten years and require approval of MR overlay zoning. The permit term for an instream mining operation may be set longer than five years only where there have been no significant violations of operating standards by the applicant on the site or adjacent sites within the past five years.*	Syar proposes a permit time frame of 15 years, compared to the allowable 10 years. The project includes amendments to the ARM Plan and SMARO that would result in consistency with both documents.
(b) Location of Instream Mining. (1) Multiyear instream operations are allowed only in "designated" portions of the Russian River, Big Sulphur Creek, Austin Creek, Sonoma Creek, and the Gualala River as shown in Figures 7-1 through 7-8 of the ARM Plan or as later amended. Multiyear instream operations outside of the referenced designated areas shall only be allowed where a vested right has been established pursuant to Article 26A-05 of this chapter.		Instream mining would occur within designated portions of the Russian River.

Table 3.13-2B
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(d) Instream Mining Season. Instream operations are limited to the period from June 1st to November 1st, unless an earlier start date is acceptable to the CDFG as specified in the CDFG permit.	*Section 7.5.2, Instream Management Program, Operating Standards: "Instream gravel mining is limited to the period of June 1 to November 1, unless an earlier start date is acceptable to CDFG."*	Instream mining activities would occur June 1 to November 1.
(e) Setbacks. The following setbacks shall apply to the excavation, stockpiling, and processing and retailing activities of instream aggregate operations.		
(1) New processing operations, including crushing, washing, screening, stockpiling, mixing and retailing shall be set back a minimum of two hundred feet (200') from the low flow channel and fifteen feet (15') from ordinary high water. No asphalt or concrete plants are allowed within the ordinary high water area. No new processing operations shall be established within the floodway zone designated by the Federal Emergency Management Agency (FEMA) for the subject river or stream. Stockpiles, processing operations, and ancillary uses located within the 100-year floodplain between November 1st and June 1st shall be designed and operated to prevent on-site and off-site damage from floods.	*Section 7.5.2, Instream Management Program, Operating Standards: "Aggregate processing operations require a minimum 200-foot horizontal setback from low water and 15 feet from ordinary high water. No asphalt or concrete plants are allowed within the ordinary high water area. Stockpiles, processing operations, and ancillary uses located with the 100-year floodplain between November 1 and June 1 shall be designed and operated to prevent on-site and off-site damage from floods."*	No processing operations would occur under the project.

Table 3.13-2B
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(2) Notwithstanding subsection (e)(1) of this section, limited processing of aggregates may be authorized within the permitted or vested instream bar skimming areas on a temporary basis during the instream mining season subject to the following restrictions:…	–	No processing would occur in the identified areas.
3) Setback and area restrictions for instream operations: All excavation, loading, and grading activities associated with instream mining operations shall comply with the following: (i) Equipment shall not be operated in water except as may be necessary to construct stream crossings subject to the requirements of Section 26A-09-020 (i) of this chapter; (ii) Skimming operations shall be set back from the low-flow channel as may be required by site-specific conditions of approval, the CDFG, or other regulatory agencies with jurisdiction; (iii) To preserve riparian habitat along existing banks or in the stream channel, skimming shall be set back from the ordinary high water mark thirty feet (30') or 2.5 times the height of the bank, whichever is greater. The edge of the setback shall be measured from the top of the bank toward the low- flow channel of the river. In addition, where significant stands of riparian vegetation have been identified by the CDFG within the channel, skimming and excavations activities shall leave such areas undisturbed; (iv) These standard setbacks may be determined on a site by site basis by the director or their designee, in consultation with the CDFG;	*Section 7.5.2, Instream Management Program, Operating Standards: "Mining will not be allowed in the water, below the water level…"* *Section 7.5.2, Instream Management Program, Operating Standards: "Gravel removal shall not take place within an outer bank setback defined as the greater of either 30 feet or 2.5 times the height of the outer bank."* *Section 7.5.2, Instream Management Program, Operating Standards: "Following consultation with CDFG, retention of existing riparian vegetation along the low-flow channel and other significant stands of riparian vegetation shall be required by the County except where necessary to accommodate an access road."*	Skimming under all methods would be limited to non-wetted areas. Minor roiling of the river may occur when equipment crosses the river and enters the wetted-stream during installation and removal of the temporary bridges. Please refer to Section 26A-09-010(g) for a discussion of the setbacks (buffers) proposed for most of the skimming methods. These buffers, with the exception of haul routes, would be considered "no-equipment" zones intended to protect the river against disturbance during skimming operations. In addition, Syar would maintain a setback of 30 feet or 2.5 times the slope height, whichever is greater, from the outer river bank (top of bank) to the interior edge of skimming areas. The alignment of the summer low-flow channel of the Russian River would be protected by retaining a buffer at the upper one-third of each bar, as well as

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Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(v) All setbacks and permitted and restricted areas shall be graphically shown on exhibits accompanying each instream approval or subsequent adjustments.		a buffer along the outer edge of each bar along the low-flow channel measuring approximately 20% of channel width. Syar would strengthen the buffer area at the upper one-third of each bar by transplanting riparian vegetation removed from the skimmed areas. The annual mining plans would provide graphical depictions of the gravel bars to be mined, buffer areas, and slopes.
(f) Slope Constraints for Gravel Bar Skimming. (1) Instream aggregate extraction will occur through the process of gravel bar skimming. Mining will not be allowed below a two percent minimum cross section slope measured from the water level at the edge of the flowing stream. Where two or more distinct channels exist on a site, the maximum two percent grade shall be measured from the water level of each channel.	*Section 7.5.2, Instream Management Program, Operating Standards: "Instream aggregate extraction will occur through the process of gravel bar skimming. Mining will not be allowed…below the water level, or below a two percent minimum cross-section slope from the water level at the edge of the flowing stream."*	Syar proposes different mining techniques from that identified in the ARM Plan. Mining would occur below a two percent minimum cross section slope from the summer low-flow water level for the horseshoe, alcove, and oxbow methods. Syar seeks an amendment to the ARM Plan and SMARO for the proposed methods of skimming. Approval by the County would ensure that the project would be consistent with the ARM Plan and SMARO.

Table 3.13-2B
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(2) Where a minimum low water flow is not maintained in a stream or the stream goes dry in some years, the minimum baseline elevation and grades, below which mining is prohibited, shall remain as established in the original mining and/or reclamation plan approval. For purposes of establishing a minimum baseline and slope on sites where bar skimming is proposed in a year when low water flow is not maintained and the stream goes dry, the minimum levels and grades shall be measured either from the water level on July 1st or from one foot above the thalweg. If the operators elect to measure from the water level on July 1st, they will be responsible for a survey tying cross-sections to clearly marked benchmarks or survey controls and recording the water level and flow rate.	*Section 7.5.2, Instream Management Program, Operating Standards: "Where two or more distinct channels exists on a site, the maximum two percent grade shall be measured from the water level of each channel. Where a minimum low water flow is not maintained in a stream and the stream goes dry in some years, the minimum levels and grades shall be measured either from the water level on July 1 or from one foot above the thalweg. If the operators elect to measure from the water level on July 1, they will be responsible for a survey tying cross-sections to clearly marked benchmarks or survey controls and recording the water level and flow rate.*	The main stem of the Russian River is not an intermittent stream. As such, this requirement is not applicable.
(3) Cuts in gravel bars at property lines or the edge of the mining shall be no steeper than two (2) horizontal to one (1) vertical in slope.	*Section 7.5.2, Instream Management Program, Operating Standards:" Cuts in gravel bars at property lines or the edge of mining activities shall be no steeper than 2:1 in slope."*	Cut slopes along the interior sides of the skimmed area would remain at a 2:1 ratio for the horseshoe skim, alcove, oxbow, and effective discharge stage height (EDSH). For the benching methods, Syar would establish variable slope ratios between 3:1 and 10:1 along the perimeter of the

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Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
		skimmed area.
(4) Final grades for each bar skimming site shall be graphically shown on exhibits accompanying each instream approval and shall serve as the baseline minimum elevation which must be maintained by the bar skimming operation and below which no mining activities shall be allowed.		The annual mining plans would provide graphical depictions of the gravel bars to be mined, buffer areas, and slopes.
(5) Instream bar skimming operations shall not depart from the above slope standards except where authorized by vested right reclamation plans or the adopted ARM plan policies as amended over time.		Please see above (26A-09-020[f]).
(g) Subsequent Mining Contingent on Aggradation. After extraction has taken place on a permitted site for the first time pursuant to a multiyear permit, extraction in subsequent years shall be limited to prevent permanent lowering of the channel bed and thalweg. The permit and resource management department, in coordination with the Sonoma County water agency, will determine whether any aggradation or degradation has taken place since the initial mining based on data from the required ongoing instream monitoring activities. Where aggradation is clearly shown to have occurred above the baseline minimum elevation established pursuant to Section 26A-09-020 (f) (4), additional mining will be allowed under the permit to remove only the amount of gravel deposited following the previous mining. However, further mining will not be allowed in subsequent years anywhere within the immediate mining site if the director determines, based upon consideration of all available monitoring data, that either of the following has occurred:	*Section 7.5.2, Instream Management Program, Operating Standards: "After extraction has taken place on a permitted site for the first time pursuant to a multi-year permit, extraction in subsequent years shall be limited to prevent lowering of the channel profile. Based on data from the required cross-sectional surveys, PRMD will determine if any aggradation or degradation has taken place since the initial mining. Where aggradation is clearly shown by the cross-sectional profile of the channel to have occurred, additional mining will be allowed to remove only the*	The project's primary purpose is to mine gravel bars in the Alexander Valley reach of the Russian River and to produce a sustainable yield of aggregate while simultaneously implementing the objectives of the Sonoma County ARM Plan. Under the project, the adaptive management strategy (AMS) would guide the extraction volume. The phasing of the mining operations would depend on the conditions of the bars, which would be confirmed annually before mining operations as part of the AMS. The configuration of the gravel bars and the amount of available deposits for extraction may vary each year based on the previous winter flows.

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Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(1) There has been significant net river bed degradation below the base elevation over the site or within four hundred feet (400') up or down stream of the site; or (2) The channel thalweg measurements show a significant degradation pattern over a period of two or more years, or two or more successive meander wavelengths which cannot be explained by flow levels, channel morphology and river fluctuation alone. In such cases, mining shall be halted on an interim basis, to the extent necessary, and shall not recommence until the elevation of all affected areas of the channel within the permitted area or four hundred feet (400') up or down stream have recovered and aggradation above the established baseline minimum elevation is evident. The mining plan may be modified prior to recommencement as deemed necessary by the director in consultation with the water agency and/or other qualified professionals to provide greater assurance that compliance with the baseline minimum elevation and any other site-specific performance standards will be attained. Modifications may include but not be limited to adjustments in the final grade slopes, setbacks, permitted areas, and reclamation plan.	*amount of gravel deposited following the previous mining. Where significant degradation has occurred, gravel removal will not be permitted."* *Section 7.5.2, Instream Management Program, Operating Standards: "By May 1, 1998 and every five years thereafter, or more frequently if necessary, a revised estimate of the amount of gravel deposited annually in the Russian River shall be made by the County in consultation with the Sonoma County Water Agency incorporating the results of the on-going monitoring program. If gravel removal has exceeded the estimated sediment budget to the extent that substantial channel degradation has occurred, operating standards will be changed as needed to limit extraction. If substantial aggradation has occurred, the standards may be changed to allow increased extraction. No change in standards will be proposed until all monitoring data and possible changes in*	Section 3.2, "Hydrology and Water Quality," identifies additional mitigation measures that ensure that the gravel would be extracted in a sustainable manner. The AMS is intended to produce a sustainable yield of aggregate while simultaneously implementing other objectives of the ARM Plan, including the reduction of bank erosion, maintenance of flood flow capacities, protection of adjacent uses, removal of invasive vegetation, and enhancement of fish habitat and riparian natural communities along the Russian River. Mitigation Measures 3.2-5a through 3.2-5g would require supplemental mitigation measures to the AMS to clarify monitoring and reporting requirements necessary to address issues related to gravel and sand replenishment and sustainable yield as well as geomorphology. Syar proposes to use different methods in determining the preextraction topography and longitudinal profile. Specifically, it proposes the use of the Digital Elevation Model (DEM) and thalweg surveys as replacements for cross sections at 400-foot intervals.

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Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
	management practices have been analyzed by a panel of reputable hydrologists selected by the County and the Water Agency. any changes in standards shall be referred to all agencies responsible for regulation of gravel mining or protection of resources in the Russian River channel."	The proposed monitoring and AMS will result in compliance with this standard.
(h) Authorized Activities with the Riparian Setback Zones. (1) Separated oversize gravel used for bank armoring shall be placed in a location at or near the ordinary high water mark of the channel in a manner to be specified by the director in consultation with the CDFG. (2) Disturbance or removal of vegetation above the ordinary high water mark shall not exceed the minimum necessary to provide access to the mining site along a road no wider than fifteen feet (15').		The project does not propose the use of oversized gravel for bank armoring. The installation of access roads would require the removal of vegetation, including from the terraces through the banks of the Russian River to the proposed gravel bars. The ARM plan does not identify road width standards. The project proposes temporary access roads that would be up to 15 feet wide down the river banks to the gravel bars. This would therefore be consistent with the SMARO.

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Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(i) Instream Crossings. The installation, maintenance and removal of all stream crossings shall be in compliance with the applicable requirements of the Regional Water Quality Control Board and the CDFG. All stream crossings shall also comply with the following: (1) The installation, maintenance and removal of the stream crossing shall not result in the roiling of water in excess of the requirements of Article II of Chapter 23 of this code; (2) The installation, maintenance, and removal of the stream crossing shall not increase the turbidity of streams and rivers beyond accepted standards of the regional water quality control board or other regulatory agencies as amended over time; (3) The stream crossing shall be such that water flow is not impaired and upstream or downstream passage of fish is assured at all times. Bottoms of temporary culverts shall be placed at or below stream channel grade. Culverts used for this purpose shall have no openings smaller than three feet (3') in diameter; (4) The stream crossing and ramps shall only be built from material such as naturally occurring courser sands and gravels in the area which will cause little or no siltation; (5) The stream crossing shall not be placed before June 1st and shall be removed no later than November 1st of each year unless an earlier start date and/or end date is acceptable to the CDFG and specified in the CDFG permit; (6) The director shall be notified at least seven (7) days prior to commencement of the placement or removal of instream crossings;	*Section 7.5.2, Instream Management Program, Operating Standards: "Where canoes or other boats commonly traverse the stream, channel crossings require the use of raised structures so that the bridge span is a minimum of four feet above the water line and at least eight feet wide. All crossings shall be located so they can be readily navigated and to have clear upstream approaches and downstream exits to provide safe boating conditions. Crossings shall be adequately signed upstream to inform boaters. Where crossings are required to pass shad, the span shall be at least 20 feet long."*	Syar would install temporary bridges using railroad flatcar bridges or equivalent structures to provide a minimum clearance of 4 feet above the summer low-flow channel elevation and a minimum 20-foot span across the waterway. Construction of the bridges would not involve any excavation activities, and only clean, washed gravel would be used as fill in the water for bridge abutments to get the minimum clearance and provide additional support. Syar would install wood or steel supports within the abutment. Gravel placed in the river would be pushed out, rather than dropped in the river. Wet crossings of the equipment would be minimized. As described in Section 3.4, "Vegetation and Wildlife," minor roiling of the river may occur when equipment crosses the river and enters the wetted stream during installation and removal of the temporary bridges. Syar must acquire relevant permits as well as approval of its mining plan from the USACE, North Coast RWQCB, CDFG, and NMFS before mining operations. The permits would identify specific conditions associated with the

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Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(7) On recreational navigable rivers and streams, channel crossings require the use of raised structures so that the bridge span is a minimum of four feet (4') above the water line and at least eight feet (8') wide. All crossings shall be located so they can be readily navigated and to have clear upstream approaches and downstream exits to provide safe boating conditions. Crossings shall be adequately signed upstream to inform boaters and to identify portage options if necessary. Where crossings are required to pass shad, the span shall be at least twenty feet (20') long.		placement of fill (temporary bridges) and mining activities such that water quality and fish passage is maintained. The mining season would extend from June 1 to November 1. Mining within the interior bars (those accessed via temporary bridges) would occur from June 15 to October 15 only. As a condition of approval, Syar shall notify the director at least 7 days before commencement of the placement or removal of instream crossings. The placement of bridges under the project would allow navigation by recreation boaters.
(j) Retention of Upstream Portions of Gravel Bars. Except as provided below, instream mining proposals within the Russian River shall leave the upstream bar area of each gravel bar unmined and undisturbed. (1) The county may approve an applicant's proposal to mine all or a portion of the upstream bar area where a study indicates that the requested mining methods and practices would be a superior management approach for a particular site. Such a study shall be prepared at the applicant's expense by a qualified county-approved expert, shall be submitted at the time of application, and shall include, at a minimum, the following information: (i) Assessment of the proposed project site and river channel within one-quarter mile upstream and	*Section 7.5.2, Instream Management Program, Operating Standards: "The upstream portion of each gravel bar in the Russian River shall not be mined or disturbed except where a study indicates that this technique would not be the best management approach for a particular site. The upstream bar area where mining is not permitted is defined as the portion of the bar from the upstream end to the point where the bar is widest (upstream half),*	Under the project, Syar would maintain a setback of 30 feet or 2.5 times the slope height, whichever is greater, from the outer river bank (top-of-bank) to the interior edge of skimming areas (see Figure 1-5). The alignment of the summer low-flow channel of the Russian River would be protected by retaining a buffer at the upper one-third of each bar, as well as a buffer along the outer edge of each bar along the low-flow channel measuring approximately 20% of channel width. Syar would strengthen the buffer area

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Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
downstream of the site ("assessed areas") as to the present conditions relative to low-flow channel form and stability, flood flow capacity, channel degradation or aggradation, and lateral bank erosion; (ii) Identification of all land uses along the river banks, including wells, bridges, roads, levees or other infrastructure, mining activities or operations, within the assessed areas, any erosion to outer banks which has occurred in the last five (5) years, and the potential for future erosion and opportunities to strengthen banks with riparian vegetation and/or bioengineered bank stabilization measures; (iii) Vegetation types, sizes, and locations with elevations within the assessed areas and opportunities for enhancement of a diversity of terrestrial and aquatic habitat; (iv) Fishery habitat characteristics and quality within the assessed areas and opportunities for enhancement of aquatic habitat; (v) Recommendations for setbacks, buffers, or other management practices needed to maintain stability of the low-flow channel, maintain or increase the existing flood-flow capacity, improve bank stability and minimize lateral bank erosion, and enhance terrestrial and aquatic habitat within the assessed areas. Under no circumstances shall the recommended buffer zone(s) cover more than one-half of the gravel bar(s) within the project site;	*measured from the low-flow channel to the outer bank."*	at the upper one-third of each bar by transplanting riparian vegetation removed from the skimmed areas. These buffers, with the exception of haul routes, would be considered "no-equipment" zones intended to protect the river against disturbance during skimming operations. Mining within the upper one-third of the bar would exceed the standard specified in the ARM Plan, which requires the maintenance of the upper half of the bar. This EIR, in conjunction with annual mining plans approved by the resource agencies, would fulfill the requirements of the mandated study. This EIR evaluates potential impacts related to bank erosion, geomorphology of the low-flow channel, and fish and habitat loss. Where potential impacts would be potentially significant, supplemental mitigation measures to the AMS are proposed. In addition, the annual mining plans provide additional, site-specific review of the proposed mining techniques on specific gravel bars to be mined. The mining plans, which integrate the findings of topographic surveys and monitoring results from

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Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(vi) Comparative analysis of the level of environmental mitigation and benefit which would be achieved if the upstream half of each gravel bar on the project site was left intact; (vii) To the extent data is available, an analysis of cumulative impacts, if any, related to those impacts identified above and arising from the instream mining under the alternate standards within the assessed areas, which mining occurred subsequent to the adoption of the 1994 ARM plan. (viii) A reclamation plan incorporating an enhancement program that includes measures to enhance or restore riparian habitat, stabilize banks, minimize potential for bank erosion and improve aquatic habitat.		previous mining activities, must be approved by the resource agencies before mining operations. Where potentially adverse impacts are anticipated for the issue areas identified above, mining would be adjusted accordingly. As such, implementation of the AMS with the supplemental mitigation measures and approval of the annual mining plans would ensure that the project would not conflict with this requirement of the ARM Plan. Syar's mining and reclamation plan provides the required details. Syar proposes additional project restoration activities described in the *Russian River–Alexander Valley River Enhancement Plan for Syar Industries Reach*, its river enhancement plan (REP). The purpose of the REP activities is to enhance river habitat and ecological conditions formerly degraded by past land uses and reclamation activities. Generally, the REP calls for the construction or enhancement of oxbows and alcoves. Additional and optional programmatic enhancements—riparian forest planting, streambank enhancements, placement of large woody debris, *Arundo donax* control,

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Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
		and salmonid habitat enhancements in the lower reaches of the tributary streams—are described.
(k) Russian River Gravel Mitigation Fund. All instream operations shall be required to contribute a fair-share amount to the Russian River gravel mitigation fund and/or carry out in-lieu mitigations as set forth in board of supervisor's resolution 95-0450, adopted April 11, 1995 or later amendments.	*Section 7.5.2, Instream Management Program, Operating Standards: "A Russian River Gravel Mitigation Fund will be established with mitigation measure fees from instream and terrace operations along the Russian River. The mitigation measure fees will be used for mitigation of cumulative impacts of gravel mining on fisheries, riparian habitat, water supply systems, recreational opportunities, flood control, channel degradation, and bank erosion."*	Syar shall enter into a Roadway Maintenance Agreement with Sonoma County providing its proportionate share of the responsibility to maintain the proposed haul roads (Mitigation Measure 3.6-4a).
(l) Approval by Other Agencies. All instream mining operations shall comply with the applicable review, permit and approval requirements of other public agencies with jurisdiction as they may be amended over time. These include, but are not limited to, approval of a streambed alteration agreement with CDFG, a Section 404 permit from the U.S. Army Corps of Engineers, a Clean Water Act Section 401 certification, waiver and/or Waste Discharge Requirements from the Regional Water Quality Control Board. In addition, approval by the State Lands Commission must be obtained for stream crossings on sovereign lands and mining on sovereign lands owned by the	*Section 7.5.2, Instream Management Program, Operating Standards: "All instream mining operations require approval of a streambed alteration agreement with CDFG and a Clean Water Act Section 404 permit from the Corps. All crossings require approval of a County permit according to the requirements of Ordinance 3836R and a*	Please refer to Section 26-09-010(r) for a discussion of approvals/permits required for the project.

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Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
state. All crossings require approval of a county permit according to the requirements of Ordinance 3836R and a streambed alteration agreement from CDFG.	*Streambed Alteration Agreement from CDFG. Approval by the SLC must be obtained for mining on sovereign lands owned by the State."*	
(m) Groundwater Monitoring. Where multiyear instream permits are approved or renewed along the Alexander Valley Reach, operators shall be required to monitor groundwater levels as specified in the ARM plan or by site-specific conditions of approval and/or fund the collection and analysis of such data through the Russian River monitoring program.	*Section 7.5.2, Instream Management Program, Operating Standards: "Where multi-year instream permits are approved or renewed along the Alexander Valley reach, operators shall be required to monitor groundwater levels in existing or new wells outside the ordinary high water mark at a minimum spacing of one every half mile of river. …. Well water levels shall be monitored at a minimum of four times a year."*	As described in Section 3.2, "Hydrology and Water Quality," Mitigation Measure 3.2-6 would require annual surveys for channel bed vertical stability (see Mitigation Measure 3.2-5b) to be evaluated for any potential trend in channel lowering that may affect groundwater levels.
(n) Other Streams. The annual amount to be removed from the designated portions of other streams shall be based on the natural gravel replenishment rate for the stream. All permits issued for mining in other streams shall state minimum absolute elevations for extraction as determined by the county in consultation with the Sonoma County water agency.	–	The project does not propose mining other streams.
(o) Annual Operator Monitoring Requirements. Spring cross-section survey data shall be collected and submitted prior to July 1st of each year. Fall survey data shall be collected and submitted by the end of the calendar year. Data shall be	*Section 7.5.2, Instream Management Program, Operating Standards: "Site inspections will be conducted a minimum of once*	A monitoring program would be implemented to provide the basis for mining plans and to determine whether performance criteria have been met on

Table 3.13-2B
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
collected and presented in a format acceptable to the Sonoma County water agency by a licensed land surveyor. Alternatively, spring cross-section survey requirements may be waived or reduced by the director if comparable site-specific topographic data is provided by the Russian River monitoring program administered by the county, and the operator pays a fair-share of the monitoring program costs as determined by the county. In addition, the director may exercise such discretion as authorized by the ARM plan or later amendments to increase, reduce, and/or revise the above monitoring requirements to utilize alternate means of data gathering and compliance verification and to respond to the changing data needs of the monitoring and inspection program. (1) Site-Specific Topographic Data. To monitor compliance with the site-specific baseline minimum elevation and final slopes, the stability of, or changes to, the stream channel morphology, and monitor the level of aggradation or degradation occurring on a site, all instream operators shall be required to submit spring and fall topographic cross-section data to the county. Cross-sections shall be prepared at a minimum of every four hundred feet (400') over the mining site and four hundred feet (400') up and down stream. In addition, annual cross-section data shall: (i) Be collected at bridge locations and at public well fields within four hundred feet (400') upstream or downstream of the mining site; (ii) Be collected by a licensed surveyor; (iii) Be tied into existing survey control network; (iv) Be monumented at each end for use in subsequent	*every 60 days by the County during the mining operations. Before July 1 of each year in which instream mining takes place, underwater cross-sections shall be prepared at a minimum of every 400 feet for each area proposed for extraction as well as one location 400 feet upstream and 400 feet downstream of the area to be mined. Each spring and fall, aerial photography will be developed by the County for the Russian River from the Wohler Bridge area to Mendocino County. Above-water cross sections will be prepared from aerial photography in permitted and proposed mining areas. The number of annual surveyed under-water cross sections in that area will be increased so that there is an average of at least one fixed location per half mile of river, including locations used annually by the Sonoma County Water Agency and mining operators. Surveyed cross-sections shall be prepared for the Crocker Road, Geyserville and Jimtown Bridges over the Russian River and shall*	an annual basis. The proposed monitoring program is designed to ensure appropriate site-specific (i.e., bar-scale) and system-wide (i.e., reach-scale) monitoring (conducted by qualified professionals), to provide sufficient information to the scientific review committee and resource agencies with jurisdiction over the project to make informed decisions about compliance with stated performance criteria, potential changes under the AMS, and compliance with other permit, ARM Plan, and SMARO requirements. Syar shall submit site-specific topographic information as part of the AMS during the spring and fall. The spring survey would consist of aerial photography, historic cross sections (one-half mile), river thalweg along the entire project reach and both upstream and downstream, and DEMs. This would be completed before the start of the mining season, which is anticipated on June 1 of each year. Fall surveys would consist of surveying mined bars to document “as-built” conditions (baseline), and is anticipated to occur after completion of mining

Table 3.13-2B
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
years; (v) Extend from top of bank to top of bank; and (vi) Include underwater areas and thalweg shots.	*include sections at the upstream face of each bridge, one bridge length downstream, and one bridge length upstream. The amount of materials which can be removed from any permitted instream mining site may be limited by the County on the basis of monitoring data to achieve the objectives of this [ARM] Plan."*	activities (November 1) but before the winter rains. Syar proposes the use of DEM and thalweg surveys as replacements for cross sections at 400-foot intervals. Syar seeks an amendment to the County ARM Plan and SMARO for the proposed methods of skimming. Approval by the County would ensure that the project would be consistent with the ARM Plan and SMARO. Although the methodology of data gathering is different from that proposed, it is in compliance with the SMARO condition that states that the "director may exercise such discretion, as authorized by the ARM plan or later amendments to increase, reduce, and/or revise the above monitoring requirements to utilize alternate means of data gathering and compliance verification and to respond to the changing data needs of the monitoring and inspection program."
(2) All instream operations within the Russian River shall annually fund a fair-share, as determined by the county, of the Russian River monitoring program administered by the county pursuant to the ARM Plan and Section 26A-13-010 of this chapter.	–	Please see Section 26A-09-020(k) regarding the Russian River Gravel Mitigation Fund.

Table 3.13-2B
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-09-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-09-020. Instream Mining Standards	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(3) Additional site-specific monitoring requirements may be required as a condition of a site-specific approval where the hearing body finds such additional monitoring requirements warranted in light of the site-specific environmental review.	–	Additional monitoring requirements are imposed by the various mitigation measures included in the EIR (i.e., in Section 3.3, “Vegetation and Wildlife” Section 3.4 “Fisheries Resources” etc.
(p) All aggregate operations shall be conducted in a manner consistent with the Federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA). In those instances where an aggregate mining operation conducted in compliance with the requirements of this chapter is found to result or potentially result in “adverse modification” of the “critical habitat” area of a species listed as “endangered” or “threatened” pursuant to FESA or CESA, the standards and conditions set forth in this ordinance, or in permits approved pursuant to it, may be further modified by the director of the Permit and Resource Management Department to the extent allowed under Section 26A-11-020(h), to assure that the mining activities are conducted in a manner consistent with any federal or state recovery plans or site-specific biological opinions prepared pursuant to the above acts and do not result in an unauthorized “take” of the species.		Section 3.3, “Vegetation and Wildlife,” and Section 3.4 “Fisheries Resources” evaluate the project’s effects on vegetation and wildlife resources. With mitigation measures identified in the EIR, the project would be consistent with the federal and California Endangered Species Acts and other relevant plans protecting biological resources.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(a) Requirement for Reclamation of Mining Sites. All areas disturbed by surface mining operations after January 1, 1976 shall require the approval, implementation, and completion of a reclamation plan. New mining permits shall not be approved until a reclamation plan for the mining site has been approved.	–	Syar submitted a mining and reclamation plan for the project to Sonoma County (County) in February 2006. It submitted an amendment to the original plan on June 9, 2006. The County Board of Supervisors will be responsible for approving the reclamation plan before mining operations.
(b) Findings for Reclamation Plan Approval. Before taking action to approve a reclamation plan the decision-making body shall make the following findings: (1) The reclamation plan complies with SMARA Sections 2772 and 2773, and any other applicable provisions; (2) The reclamation plan complies with applicable requirements of state regulations (CCR Section 3500-3505, and Section 3700-3713); (3) The reclamation plan will restore the mined lands consistent with the Sonoma County General Plan, Aggregate Resources Management Plan, and any other applicable specific plans or resource plans; (4) The reclamation plan has been reviewed pursuant to CEQA and the county environmental review guidelines, and all significant adverse impacts from the mining operation and the reclamation activities are mitigated to the maximum extent feasible; (5) The land and/or resources such as water bodies to be reclaimed will be restored to a condition that is compatible with, and blends in with, the surrounding natural environment, topography, and other resources, or that	–	The Board of Supervisors will make these findings if it approves the project.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
suitable off-site development will compensate for related disturbance to resource values; (6) Where the decision of Sonoma County decision-making body is at variance with the recommendations and objections raised by the State Department of Conservation, findings have been adopted to explain the reasons why specific comments and suggestions were not accepted.		
(c) A reclamation plan shall contain the following: (1) The name and address of the operator and the names and addresses of any persons designated by the operator as agents for the service of process, and the names and address of the owners of all surface and mineral interests in the subject property;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.
(2) The depth, quantity and type of minerals to be mined;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.
(3) The proposed dates for the initiation and termination of such operation;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.
(4) A description of the general setting of the area, including a detailed description of the geology, climate, groundwater, drainage, and soil characteristics of the area in which surface mining and/or reclamation is to be conducted;	–	Syar's Reclamation Plan has the required details for this section.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(5) The location, size and legal description of the lands that will be affected by such operation, a map that includes the boundaries and topographic details of such lands, the location of all streams, roads, railroads, and utility facilities within, or adjacent to, such lands, the location of all proposed access roads to be constructed in conducting such operation and the location of excavations, mine waste, stockpiling, processing equipment, structures and other appurtenances used in or disturbed by the mining operations;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.
(6) A description of and plan for the type of surface mining to be employed and a time schedule that will provide for the completion of surface mining on portions of the mined lands so that reclamation can be initiated at the earliest possible time on those portions of the mined lands that will not be subject to further disturbance by the surface mining operation;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.
(7) A description of the proposed use or potential post-mining uses of the land after reclamation and evidence that all owners of a possessory interest in the land have been notified of the proposed use or potential uses;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(8) A description of the manner in which reclamation, adequate for the proposed use or potential uses will be accomplished, including a description of the manner in which contaminants will be controlled, and mining waste will be disposed; and a description of the manner in which affected streambed channels and streambanks will be protected and/or rehabilitated to a condition minimizing erosion and sedimentation;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	The February 2006 mining and reclamation plan identifies the reclamation activities. Reclamation covers a range of activities including the removal of equipment, and treatment of the mined gravel bars following skimming and revegetation. Final reclamation at one site could occur simultaneously with annual reclamation procedures at another site. The plan specifies that mining and reclamation activities are closely related and sometimes indistinguishable from mining operations. The plan identifies specific reclamation standards that must be followed.
(9) Maps and/or graphic exhibits of the final grades, revegetation plans, cross sections of the mining site, and/or other reclamation details proposed to be implemented;	–	Syar's Reclamation Plan has the required details for this section.
(10) An assessment of the effect of implementation of the reclamation plan on future mining in the area;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.
(11) A statement that the person submitting the plan accepts responsibility for reclaiming the mined lands in accordance with the reclamation plan;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	Syar's Reclamation Plan has the required details for this section.
(12) Preliminary cost estimates for each phase and task of the reclamation plan consistent with Section 26A-11-050 of this chapter;	–	Syar's Reclamation Plan has the required details for this section.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(13) Any other information which the director, planning commission, or board of supervisors may require;	*Section 7.3 Countywide Requirements, Reclamation Standards No. 1*	This condition is not applicable.
(14) Proposed criteria for evaluating the compliance or completion of reclamation tasks, such as grading final topography, revegetation, and sediment and erosion control;	–	Syar's Reclamation Plan has the required details for this section.
(15) An Interim Management Plan (IMP). As an optional element, if interim idle periods of no mining are anticipated, the reclamation plan may also set forth provisions to be employed during any idle period to assure that the site is maintained in stable condition and in compliance with SMARA.	–	This condition is not applicable, as interim idle periods are not anticipated.
d) *Reclamation Plan Standards*. Properties used for surface mining operation shall be reclaimed after the operation or an approved phase of the operation has been completed in accordance with the following standards:	*Section 7.3, Countywide Requirements, Reclamation Standards Nos. 1 through 9*	Reclamation activities would occur at the end of each operating season (annual reclamation) and at the end of the final year of operations for each bar (final reclamation). In the case of vegetation transplanting activities, Syar would transplant large clumps or stands of riparian vegetation from the proposed skimmed areas to the high bank and head of the bars before and in conjunction with skimming operations on each bar. Syar would monitor the vegetation on an ongoing basis, in consultation with relevant agencies. Syar would supplement the transplanting approach with pole plantings and other methods if determined necessary through the AMS.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
		For reclamation of access roads: Individual access roads from the terraces to the gravel bars (across the channel banks) may provide access over several operating seasons since temporary bridges allow movement from bar to bar upstream and downstream from such access points. Access roads from the terraces to the gravel bars would be reclaimed when all skimming involving any one access road has been concluded. Reclamation work would include ripping the ground surface, reseeding with an erosion control seed mix compatible with surrounding riparian vegetation, covering the ground surface with straw to minimize erosion, and staking straw wattle rolls at 50-foot intervals across the slope of the roadway to intercept silt.
(1) *Time Limitation*. The initial reclamation tasks shall proceed as soon as practicable and the operator may be required to progressively rehabilitate the site as the excavation operation or approved phase is completed. Reclamation on instream bar skimming sites shall be completed by each mining season on November 1st, except where specific authorization to work beyond this date has been granted by the director in consultation with the CDFG;	*Section 7.3, Countywide Requirements, Reclamation Standards No. 2*	Please see item (d) above
(2) *Final Reclaimed Slopes*. Final reclaimed slopes, abandoned spoil piles, topsoil or overburden stockpiles, and the entire mining site shall be graded and smoothed as necessary so as to control erosion, prevent the creation of potentially dangerous areas, present a natural appearance, and comply with any minimum or maximum slope standards	*Section 7.3, Countywide Requirements, Reclamation Standards No. 4*	Syar would grade the skimmed floors to a smooth slope.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
set forth and required in the reclamation plan approval in order to leave the site in an acceptable condition adaptable to the stated post mining land use.		
(3) *Resoiling*. Mined slopes shall have soil added where needed to support the approved type of revegetation. Topsoil, overburden, aggregate processing sediment, and other native earth materials from the site and surrounding area shall be used to the maximum extent feasible in this process.	*Section 7.3, Countywide Requirements, Reclamation Standards No. 6*	Topsoil may be present in the areas proposed for benching and REP activities. Syar would temporarily stockpile topsoil adjacent to the skimming or REP areas. At the end of the operating season, Syar would use the stockpiled soil to resoil the side slopes of the area. These slopes would be revegetated with transplanted vegetation from other skimmed areas and through colonization of native riparian habitat. Syar would stabilize the middle and toe of these slopes with straw wattles and willow stakes to help retain the soil and establish vegetation.
(4) *Revegetation.* i) Reclamation of mining sites shall include revegetation of denuded areas in a manner consistent with the intended post-mining use of the site. Revegetation methods shall be appropriate for the topographical, soil, and climatic conditions present at the site and shall incorporate shrubs and trees native to the area. The natural regrowth of riparian vegetation shall be encouraged on disturbed areas adjacent to streams and water bodies.	*Section 7.3, Countywide Requirements, Reclamation Standards No. 5* *Section 7.5.3, Instream Management Program, Reclamation:*	Syar would transplant large stands of riparian vegetation from the proposed skimmed areas to the high bank and head of the bars before and in conjunction with skimming operations on each bar. Syar would monitor the vegetation on an ongoing basis, in consultation with relevant agencies. Syar would supplement the transplanting approach with pole plantings and other methods if determined necessary through the AMS. During the first year after transplanting, Syar would monitor once every 2 months in areas where access roads have been seeded. After the first year, monitoring would occur on a quarterly basis for a period of 5 years. Water for reclamation planting would be provided by irrigation wells located on Syar farming property, which are

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
		located adjacent to many of the proposed bars. Water trucks would be used to provide water for reclamation planting and transplanting activities. However, at the conclusion of mining, watering would cease.
ii) The revegetation standards contained in the 1992 Revegetation Technical Report available at the Permit and Resource Management Department will be applied where applicable. Unless site specific vegetation performance standards are established in the reclamation plan approval, revegetation standards shall be considered met once the established plantings have been in place at least five (5) years, are capable of self-regeneration, and have met the quantified measurements for a period of two (2) years without human intervention such as watering, weeding, fertilizing, replanting, etc.	*Section 7.3, Countywide Requirements, Reclamation Standards No. 5*	Please see item (4)(i) above.
(5) *Grading, Backfilling and Cleanup*. Reclamation plans shall make provisions to ensure that the mining site is left in a final condition after operations are complete: (i) Safe with stable waste piles, cut slopes, fill slopes and with the elimination of steep-sided pits and holes,	*Section 7.3, Countywide Requirements, Reclamation Standards No. 3*	All mining equipment and vehicles are portable, and would be removed upon completion of mining. No waste dumps exist, nor would they be created on the proposed gravel bars.
(ii) Free of derelict machinery, waste materials, mining waste and scrap,		Syar would load the equipment onto trailers and haul it back to the Syar aggregate processing plant or to other Syar facilities at the end of each operating season.
(iii) Revegetated where necessary for soil stabilization,		Please see discussion in this table under Section 26A-11-010(4)(i) regarding revegetation.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(iv) Free of drainage problems,		Syar would grade the skimmed floors so that drainage problems would not exist.. Please see discussion of Section 26A-09-010(m) regarding mining methods for specifications of slopes and floors of the worked areas.
(v) No toxic substance shall be used as fill material,		No toxic substances will be used in fill under the reclamation of mining sites.
(vi) Coordinated with present and potential future land use, topography and the general environment of surrounding property,		Please refer to the discussion of Section 26A-11-010(c)(7) regarding future land uses.
(vii) The person responsible for reclamation shall practice effective mosquito control measures, and		Please see the discussion of Section 26A-09-10(g)(3) regarding ponding of water. The minimization of ponding would be a source of vector management.
(viii) Access routes not intended for public use in the reclamation plan shall be secured so that adjacent property owners are not unnecessarily subjected to trespass or vandalism;		The mining area would be located entirely within private property. Please see the discussion of Section 26A-09-010(k) regarding fencing and security. In addition, the February 2006 mining and reclamation plan indicates that the skimming area is posted as private property. It is located away from inhabited areas. Vineyard and mining employees would control unauthorized entry to the property.
(6) *Drainage, Erosion and Sediment Control*.		
i) Grading plans shall be designed and carried out to minimize erosion, provide for drainage to natural outlets or interior basins designed for water storage, and to eliminate potholes and similar catchments that could	–	Please see the discussion of Section 26A-09-010(d) regarding stormwater runoff, flood control, and water quality. Please also see the discussion of Section

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
serve as breeding areas for mosquitoes, sites of fish entrapment, or threats to public safety.		26A-11-010(5)(vii) regarding mosquito control.
ii) Silt basins which will store water during periods of surface runoff shall be equipped with sediment control and removal facilities and protected spillways designed to minimize erosion when such basins have outlet to lower ground. iii) Sediments accumulated in any detention basin, pond, or other facility shall be periodically removed. Such removal shall take place at least once within fourteen (14) days of and no later than November 1st of each year.	–	The project would not require silt basins or other types of detention facilities.
iv) Final grading and drainage shall be designed in a manner to prevent discharge of sediment above natural levels existent prior to mining operations.	*Section 7.3, Countywide Requirements, Reclamation Standards No. 4*	Please see the discussion of Section 26A-09-010(g) regarding erosion and sedimentation.
v) Upon reclamation, no condition shall remain which will or could lead to the degradation of water quality below applicable standards of the regional water quality control board or any other agency with authority over water quality.	–	Please see the discussion of Section 26A-09-010(g) regarding buffers that would prevent degradation of water quality.
vi) Measures undertaken for slope protection, erosion and sediment control, shall conform to the requirements of Sections, 26A-09-010 (d), (e) and (g).	–	Please see the discussions of Sections 26A-09-010(d), 26A-09-010(e), and 26A-09-010(g) regarding erosion and sedimentation.

Table 3.13-2C
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-010) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-010. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
vii) Overburden, waste mud, silt, and other sediments generated by the mining operation shall be stored in such a manner that allows their recovery for use in reclamation.	–	Please see the discussion of Section 26A-09-010(n) regarding topsoil.
viii) Levees and other bank protection measures shall conform to the standards of the Sonoma County water agency consistent with the requirements of Section 26A-090-010(g). Plans for the maintenance of such measures or structures shall be included in the reclamation plan;	–	This project does not propose any levees or other bank protection measures.
(7) *Financial Assurances.* All mining operators and owners responsible for the reclamation of mined lands shall submit effective financial assurances to the county to ensure the completion of approved reclamation activities as set forth in Section 26A-11-050 (ord. NO. 5165 S 1, 1999)		Syar will comply with this requirement.

Table 3.13-2D
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-020. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(a) After mining has been completed, all bars shall be revegetated through natural reseeding and regrowth processes with native plants in the area. Reclamation plans for instream operations shall describe where and how plantings using shrubs and trees native to the area will supplement the natural revegetation process along banks, on haul roads, and in processing areas;	–	Please see the discussion of Section 26A-11-010(d)(4)(i) regarding revegetation.
(b) The streambed above the low flow channel shall be graded in such a manner that no pools or depressions exist where fish entrapment might occur. Grading operations shall be completed at the conclusion of each year's extraction;	*Section 7.5.2, Instream Management Program, Operating Standards: "All mining and grading shall minimize the potential for entrapment of fish when water levels change, and the disturbed portions of gravel bars shall be graded at the end of the mining season so that there are no areas where water can pool."*	Please see the discussion of Section 26A-09-10(g)(3) regarding ponding of water.
(c) Oversize gravel separated during extraction and/or processing operations may be placed in or near the ordinary high water mark of the channel, along the bank, or over the surface of the graded bar to provide additional armoring in a manner to be	–	Sand and gravel would be extracted, loaded onto haul trucks, and transported to the aggregate processing plant. Aggregate is not expected to be stored on-site.

Table 3.13-2D
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-020. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
specified by PRMD in consultation with the CDFG. Particular attention shall be given to areas where access routes traverse the ordinary high water mark;		
(d) Extraction, grading, screening and placement of oversize gravel and all other activities associated with instream mining operations shall be concluded and equipment removed from the mining site no later than November 1st of each year. Stream crossing used in mining operations shall be removed no later than November 1st each year except where earlier start date or end date is acceptable to the CDFG and is specified in the CDFG permit;	–	All equipment and temporary bridges would be removed by November 1 of each year.
(e) Where processing operations other than the screening of oversize gravel take place within two hundred feet (200') of the banks of any navigable stream as defined by the U.S. Army Corps of Engineers, provisions shall be made in the reclamation plan for visual screening between such operations and the stream channel.	–	No processing would occur at or adjacent to the proposed gravel bars.
(f) At the conclusion of skimming activities each season, the affected bars shall be left in a condition free of equipment, stock piles, coarse blade or equipment marks and shall exhibit a slope and elevation which is no less than the approved slopes and minimum baseline elevations approved for the site. Subexcavation below approved slopes or elevations and/or back filling with other material to achieve minimum baseline elevations is prohibited;		Syar will comply with this requirement.

Table 3.13-2D
Applicable Standards of the Sonoma County Surface Mining and Reclamation Ordinance (Section 26A-11-020) and Aggregate Resource Management Plan, and Relationship of the Proposed Project

Sec. 26A-11-020. Reclamation Plan Requirements	ARM Plan Cross Reference	Relationship of Proposed Project to SMARO/ARM Plan Standards
(g) Notwithstanding the above, any bank restoration, stream restoration and enhancement or revegetation tasks included in the site-specific reclamation approvals shall be executed and completed in a manner consistent with the terms and requirements of the approval.	–	Mining within the interior bars (those accessed via temporary bridges) would occur from June 15 to October 1 only, allowing time for the removal of bridges and completion of mining activities by November 1 of each year.
(h) The director has the authority to approve proposed modifications to the standards or conditions of mining methods for the mining reach of Austin Creek and the Gualala River to allow for implementation of adaptive management approach changes in consultation with the resource agencies with the following limitations:	–	This condition is not applicable.
(I) Other Standards. Notwithstanding the preceding instream reclamation requirements, the standards may be modified or waived by the decision making body for the mining reach of Austin Creek and Gualala River, only where it is demonstrated through supplemental site-specific environmental ….	–	This condition is not applicable, as the project does not propose to mine within Austin Creek or the Gualala River.

3.14 RECREATION

A. Setting

REGIONAL SETTING

Northern Sonoma County provides for an array of recreation activities, including boating, fishing, camping, wine tasting, biking, hiking, horseback riding, and wildlife viewing. The Russian River is a major recreation resource within the region. The Russian River, including the study area, is popular for boating, particularly nonmotorized boating, downstream of the study area. The 18,000-acre Lake Sonoma area is located less than 10 miles northwest of the study area (Geyserville Chamber of Commerce 2007). Scenic driving and visitation to wineries are popular recreation activities in the Alexander Valley.

LOCAL SETTING

The study area is located near Geyserville along the Russian River, which is the focus of recreation in the area. Activities within the study area include boating, wildlife viewing, swimming, sunbathing, fishing, wine tasting, and camping. Public access to the study area is limited to public road crossings, primarily the area near Geyserville Bridge, where State Route (SR) 128 crosses the Russian River. Therefore, it is likely that most recreation use in the study area is either by adjacent private landowners, public users at the SR 128 bridge, and on-water public use via upstream public access locations (most likely in Asti or Cloverdale).

The Russian River is navigable from Cloverdale to the coast and is included within the Russian River Waterway Trail (Sonoma County 1989, Sonoma County Board of Supervisors 2003). Boats on the river are those used for flat-water paddling, such as canoes and rafts; there are no whitewater rafting opportunities within the study area. Although April to October is the best boating season on the river at large, because of lower, slow-moving water, the stretch within the study area is best during the early part of the season, from April to August, when water flow is at neither its annual peak nor summertime low (RussianRiverTravel.com 2007a and Mercer, pers. comm. 2007); however, one source states that the boating season typically occurs from January through June within the run that encompasses the study area (California Creeks 1997). As for commercial use of the river, according to the River's Edge Kayak & Canoe Trips, commercial rafting generally occurs from April to August in a normal water year (to avoid heavy flows during the early months and minimize portaging [walking in low-flow areas] during the later months).

The 6.5-mile segment of the Russian River within the study area is Class I[1] and is part of a larger, 11-mile run between Asti (the put-in) and the Alexander Valley RV Park and Campground (the take-out) that crosses through an open valley with surrounding vineyards and over wide gravel bars with little shade. This stretch is also boated commercially by a company out of Healdsburg, which runs group and weekend trips, and describes this run as remote, a favorite in the early season, and the company's most challenging run with a little more current than other runs south of the study area (River's Edge Kayak & Canoe Trips 2007). The meandering run, which is not available during the latter part of the season because of low flows, includes several swimming holes and picnic spots and requires 4–5 hours to complete. People gain unauthorized access to the river at the Geyserville Bridge (SR 128), where sunbathers and

[1] Class I rivers are considered easy, consisting of fast-moving water with riffles and small waves and few obstructions. Difficulty classes range from Class I (Easy) to Class V, which is Expert level with extremely long, obstructed, or very violent rapids.

anglers can be seen. River use is most likely to be by canoe, kayak, or inner tube. Wildlife viewing by boat or from shore may also be a common activity.

The Russian River also provides for fishing use, both from the banks of the river and by boat. Recreational fish species within the river include large and smallmouth bass, catfish, and steelhead and Chinook salmon in the winter (Hight 2007, RussianRiverTravel.com 2007b). Public bank-fishing use likely only occurs in the SR 128 bridge area because the river is not publicly accessible by road and bank access is thus limited. There may also be bank fishing use by adjacent private landowners along the rest of the river.

Wine tasting is another primary activity that occurs around the study area. According to the Alexander Valley Winegrowers' Map of Alexander Valley (Alexander Valley Winegrowers 2007), seven vineyards surround the study area between the Geyserville Bridge and the Jimtown Bridge to the south. Many more vineyards and tasting rooms are located both north and south of the study area. Camping is available in the study area at the Alexander Valley RV Park and Campground (Geyserville.com 2007). Additionally, Geyserville Avenue is a proposed Class II bicycle route[2] according to the Sonoma County Bikeways Plan (Sonoma County Bicycle & Pedestrian Advisory Committee 1997).

B. Regulatory Framework

LOCAL REGULATORY ISSUES

The *Sonoma County General Plan* (Sonoma County 1989) contains an Open Space Element that describes policies for parks and equestrian and hiking trails, as well as bikeways. The goals, objectives, and policies described in the County General Plan support establishing a countywide park and trail system and a bikeways network. Parkland needs and implementation measures are discussed in the Public Facilities and Services Element. The *Draft Sonoma County Outdoor Recreation Plan* (Sonoma County 2003) was developed to facilitate cooperation among agencies in the planning, acquisition, management, and funding of recreation facilities in unincorporated areas of Sonoma County. The plan recommends policies that could form a County General Plan amendment, classifies and inventories parks within the county, and identifies parkland needs throughout the county using quantitative guidelines and public input. Based on trends, survey information, public input, and identified needs, recommendations for additional parks and trails are included within the plan. Three recommendations are pertinent to the study area: developing a community park in Geyserville, providing river access in Geyserville, and acquiring land on the Russian River in the Alexander Valley area for public access. The latter recommendation for river access was also suggested in the California Coastal Conservancy's *Russian River Trespass Management and Access Plan.*

C. Potential Impacts and Mitigation Measures

CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE

According to Appendix G of the State CEQA Guidelines, a project would typically have a significant impact if it would:

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[2] A Class II bicycle route is a bicycle lane that is designated on roadway shoulders, outside of vehicle travel lanes, for preferential use by bicycles.

- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, or
- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

In addition, it was determined that the project would result in a significant effect on recreational resources if it would:

- substantially reduce recreational opportunities or substantially degrade recreational experiences.

The project would not increase use of recreational facilities, include recreational facilities, or require the construction or expansion of recreational facilities. Therefore, the project would not result in a significant impact under the first and second significance thresholds listed above.

PROJECT IMPACTS

Findings in the ARM Plan

Section 8.7, "Land Use," of the aggregate resource management plan (ARM Plan) PEIR evaluated potential recreation impacts. The ARM Plan PEIR noted that instream mining operations could result in adverse recreation impacts by reducing stream access; creating unaesthetic conditions, noise, and dust; disrupting wildlife habitat; and posing a potential conflict with recreationists on public roads used as gravel haul routes. Instream mining operations also would be visible to river recreationists on weekdays during the summer when river use is substantial. Further, recreational fishing could be affected by losses in streamside vegetation and fisheries resulting from bank erosion. The PEIR determined that these impacts would not be significant on a project level. The PEIR further determined that cumulative mining projects could result in a significant impact, but identified required measures to mitigate that impact to a less-than-significant level.

Project Impacts

Impact 3.14-1 The project would not substantially reduce recreational opportunities or substantially degrade recreational experiences.

Up to four gravel bars on either side of the 6.5-mile stretch of the Russian River within the study area would be mined for gravel each year from June 1 to November 1. Mining operations would alter the recreation setting and thus the recreation experience for boaters, as well as anglers and sunbathers. Because wine tasting does not occur immediately adjacent to the river in this reach, mining operations would not disturb participants in this activity, although hauling operations could affect traffic in the local area. See Section 3.7 for impacts on traffic and circulation.

Mining operations could occur at four gravel bars (one bar at a time) through the 5-month duration, or occur simultaneously at two bars for 50 days or less toward the end of the operating season (when flows are at the lowest) if mining commences late in the season; the latter scenario is expected to occur rarely. Mining and hauling operations would primarily distract from the recreational experiences of weekday boaters because of operational dust, noise and views of the equipment, stockpiles, vegetation clearing and mining areas. The noise and views of mining and river enhancement program (REP) activities could also negatively alter the primarily undeveloped, natural/agricultural recreation setting for boaters and may reduce their opportunities for wildlife viewing, and negatively affect their recreation experience. Steelhead and Chinook salmon runs in the Alexander Valley reach of the Russian River typically take place during the late fall, winter, and early spring months (October–April), when there would be little or no mining activity under the project. But there would be some crossover between the boating season (January–August) and mining activities (June 1–November 1) although mining would not begin until June at the earliest. The timing of mining activities would also overlap with the commercial boating season, but most commercial boating use, and likely public use as well, typically occurs on the weekend when gravel would not be actively mined, and noise and dust would not occur. In addition, because mining activities would occur in such a small area relative to the length and duration of the overall boating run (11 miles and 4–5 hours duration), adverse effects on the recreational experience would be temporary, even if boating occurs during the weekday period.

The areas subject to mining and construction of enhancement features are private lands with no public access. The only legal access through the mining and enhancement areas is by boat along the river. As a result, because bank access is limited, most fishing, swimming and wildlife viewing within the study area is likely to be done by boat. Negative effects on the recreational experience would therefore be similar to those previously described for boating. The exception would be at the Geyserville and Jimtown Bridge areas, where public access likely occurs. The noise associated with mining on weekdays could negatively affect bank fishing in these area. Project noise may also affect weekday sunbathers.

As required by the operating standards of the ARM Plan, temporary bridges erected for mining purposes would have a minimum height of 4 feet above the water. Though this is low, boaters would be able to pass under the bridges. The ARM Plan and SMARO require the posting of signage upstream of temporary bridges to alert boaters of the bridges, and the project will be conditioned to meet this requirement. The impact is therefore less than significant with the measures already established in the ARM Plan.

In conclusion, most recreation conflicts would be reduced because of the short crossover between the boating season and mining activities, and the fact that the bulk of recreation use in the study area typically occurs on weekends and holidays when mining or construction activities would not occur pursuant to existing County mining ordinance standards (26A-09-010(j)). In addition, the impact on river recreation would be less than significant because the project would operate in only a limited portion of the overall length and duration of a user's experience.

Mitigation Measures

None. The impact on recreational users is less than significant with measures already established in the ARM Plan and mining ordinance.

Impact 3.14-2 Implementation of the REP will expand riparian and wetland areas, improve aquatic and terrestrial habitats that would benefit recreational users.

Once completed and well established, the REP would provide additional wetland areas and fish habitat that could benefit recreational users by creating enhanced views of riparian forest, wetland and other complex channel features and potentially creating more opportunities for wildlife viewing and fishing. The long term impact of the REP is therefore beneficial.

Mitigation Measures

None. The long term impact of the REP is beneficial.

Impact 3.14-3 Mining and REP streambank enhancements, including bioengineered bank stabilization measures and placement of large woody debris, could have a negative effect on recreation if they create an attractive nuisance, boating hazards or temporarily block the navigable channel.

Although wet crossings of equipment would be limited to the construction of temporary bridges, wet crossings could delay boaters and anglers from moving downstream or disrupt the natural recreation setting and negatively affect the recreation experience. The operations may also create an attractive nuisance for users of the waterway and visitors to the area. Installation of materials along the channel banks is also subject to extreme hydraulic force of the river and may dislodge and create a boating hazard. This impact is potentially significant.

Mitigation Measure

3.14-1 Prior to issuance of grading permits, Syar shall submit an engineering analysis demonstrating that any proposed bank stabilization or enhancement features are anchored, meet applicable construction standards, and are designed to withstand the hydrologic force of the river.

3.14-2 Syar shall install fencing, post warning signs, provide site patrol, and take other actions necessary to ensure the security of the active mining site and associated work equipment storage areas and control private access to those areas.

Impact Significance After Mitigation

Mitigation Measures 3.14-1 and -2 would substantially reduce impacts related to site safety and boating hazards to a less than significant level.

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4.0 TOPICAL ISSUES AND IMPACT SUMMARIES

4.1 GROWTH-INDUCING IMPACTS

The CEQA Guidelines define growth-inducing impacts as follows:

> The ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment (CEQA Guidelines Section 15126.2[d]).

Assessing the growth inducement potential of the proposed project thus involves determining whether the proposed project would directly or indirectly support more economic or population growth or residential construction.

Growth inducement may constitute an adverse impact if the growth is not consistent with the land use and growth management policies for the affected area. The Sonoma County General Plan, and land use and growth management plans and policies of cities within the County, guide development patterns and provide for orderly development supported by adequate public services. A project that would induce “disorderly” growth in conflict with local land use plans could indirectly cause additional adverse environmental impacts to other public services.

As discussed in the ARM Plan PEIR, aggregate is a construction material used for new residential and commercial development. While aggregate supports new development, the availability of aggregate alone is not a stimulus to new development. Historically, aggregate is not mined unless there is a demand for it. Due to the small contribution of aggregate mining to the economic base, the ARM Plan and the future mining allowed by it—including the proposed project—would not induce growth in the County. The general plans of Sonoma County and the nine incorporated cities within the County set forth the amount of growth and development that is planned and allowed in those areas. Future aggregate mining is not expected to encourage any development or growth in addition to, or in conflict with, locally adopted general plans.

The project proposes aggregate mining along the Alexander Valley reach of the Russian River, consistent with the ARM Plan. The ARM Plan PEIR evaluated the potential for growth-inducement from mining this reach and other areas of the County at a program-level of detail. The production of aggregate from this reach would support new development but would not induce growth. This EIR has undertaken a full and independent analysis of whether the proposed project would encourage any development or growth, in addition to, or in conflict with, locally adopted general plans.

The proposed project would require approximately five workers in the study area operating mining equipment and 20 truck drivers hauling material to and from the study area to the Syar aggregate processing plant in Healdsburg. No changes to the aggregate processing plant, in terms of expansion of facilities or increase in workers, would result from this project. Due to the lack of changes at Syar's existing facilities, the small number of workers required for mining activities, and the likelihood that these workers would be from the local area, the proposed project would not be expected to directly induce population growth.

Indirectly, the project would support, but not cause growth within the County through a supply of needed materials. The aggregate produced by the proposed project would provide a commodity similar to lumber, electrical and plumbing supplies, and related construction materials, the availability of which influences total development cost but does not cause growth. The aggregate would be used to support planned development in accordance with the Sonoma County General Plan as well as with the general plans of the incorporated cities within the County. While abundance of aggregate is not considered a stimulus to development, the lack of aggregate could result in a negative impact on planned growth. As noted in the ARM Plan and EIR, the aggregate needed for planned development can be provided by sources within the County or it can be imported from elsewhere. If it is imported, the costs associated with transporting the material would increase development costs, which in turn would affect the level of and type of development. The transportation of aggregate from areas outside the County would result in additional traffic, air quality and noise impacts (see Section 4.5, Project Alternatives, for a discussion of why this alternative was considered but eliminated).

In summary, the project would not directly induce population growth, and would indirectly support planned growth in accordance with the Sonoma County General Plan while avoiding the costs and impacts of importation of aggregate. Therefore, potential impacts related to growth-inducement would be considered less than significant.

4.2 CUMULATIVE IMPACTS

Cumulative impacts are defined by CEQA Guidelines Section 15355 as "two or more individual effects, which, when considered together, are considerable or which compound or increase other environmental impacts." Specifically, "the cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."

For the purposes of this Draft EIR, cumulative effects would be considered significant if the proposed project's incremental effect, though individually limited, is cumulatively considerable when viewed in connection with the effects of past, current, and probable future projects (CEQA Guidelines Section 15064(h)(1)). "Where an agency is examining a project with an incremental effect that is not 'cumulatively considerable,' a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable (CEQA Guidelines Section 15130(a))."

CUMULATIVE SETTING

CEQA Guidelines Section 15130(b)(1) specify the need to provide either of the following as part of cumulative setting to ensure adequate discussion of significant cumulative impacts:

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or

- A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, that describes or evaluates regional or areawide conditions contributing to cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

The 1994 ARM Plan allows instream mining as well as quarry and terrace mining in designated areas within Sonoma County, including portions of the Alexander Valley of the Russian River where the proposed instream mining operations would occur. The ARM Plan PEIR did not include a list of specific past, current and probable future projects for consideration in the cumulative impacts analysis. Instead, it considered "all mining and reclamation which has occurred in the past, the existing and previously approved aggregate operations which may continue into the future, including operations with existing permits and vested rights (Middle Reach bar skimming by Syar), and other development and land uses which may have a similar or related effect" as part of the cumulative context. In place of a list of other development projects, the ARM Plan provided population and aggregate demand projections that served to describe the regional conditions contributing to cumulative impacts. These projections were provided in Chapter 3, Aggregate Demand, of the ARM Plan PEIR.

Since the ARM Plan PEIR was certified in 1994, other related projects have been planned and/or implemented that should be considered in the cumulative setting. A brief description of these projects is provided below:

- Shamrock mining operations (Russian River upper reach);
- Syar Phase VI terrace mining (Russian River middle reach);
- Syar Middle Reach operations;
- Gallo of Sonoma winery expansion (3387 Dry Creek Road);
- Clos du Bois winery expansion (19410 Geyserville Avenue);
- Dry Creek Rancheria Economic Development Master Plan (River Rock Casino);
- Cloverdale Rancheria of Pomo Indians Fee-to-Trust and Resort Casino Project;
- Saggio Hills Project

Shamrock Mining Operations

Shamrock proposed to conduct instream mining of aggregate materials on portions of 13 parcels along an approximate 2.5 mile stretch of the Russian River (Sonoma County 2000). The parcels are approximately two miles south of the City of Cloverdale, east of State Highway 101. The materials would be processed at an existing plant located on Crocker Road, east of Cloverdale. The ARM Plan PEIR addressed the Shamrock mining operation at a program-level of detail. In 2001, the County adopted a Mitigated Negative Declaration (MND) tiered from the ARM Plan PEIR and a use permit. The project would result in significant and unavoidable visual, noise, and cumulative impacts, consistent with the ARM Plan EIR conclusions. The project would also result in significant but mitigable impacts in the following areas: air quality, biological resources, cultural resources, hazards and hazardous materials, and recreation. Relevant ARM Plan PEIR mitigation measures and Shamrock project-specific mitigation measures would reduce the above significant impacts to less-than-significant impacts.

Syar Middle Reach Operations

Syar proposed bar skimming for sand and gravel on six sites (Doyle, South Levee haul Road, Middle Reach, North Levee, Healdsburg Bendway, and Riverbend) along a 9-mile reach of the Russian River, between Wohler Bridge and east of Healdsburg (Sonoma County 1997). These sites are located in the vicinity of the existing Syar processing plant. Operation and site reclamation at these locations would be conducted in phases over a period of several years. Syar had vested rights on five of the six sites, and thus did not require a new use permit. Syar did not have vested rights for the Healdsburg Bendway site, and thus a conditional use permit was required. Five alternatives were evaluated.

A joint supplemental Environmental Impact Report and Environmental Impact Statement was prepared to evaluate the potential effects of the proposed alternatives on the environment. Besides the No Project Alternative, the Limited Bar Skimming Alternative was identified as the environmentally superior/preferred alternative. The EIR/EIS identified significant and unavoidable impacts associated with the various alternatives, including effects on the following: streambed, groundwater, fisheries, aquatic resources, riparian habitat, visual quality, recreation, air quality, noise, and socioeconomics. For all other significant impacts, potential effects would be reduced to less-than-significant levels.

Syar Phase VI – Terrace Mining

In 2005 Syar proposed to extend the time to mine the Phase VI terrace mining area adjacent to the Middle Reach of the Russian River, south of Healdsburg. Similar to other terrace mining sites identified in the ARM Plan and PEIR, the initial Phase VI use permit was approved via a mitigated negative declaration (MND) tiered from the ARM Plan PEIR. Because Syar could not complete the Phase VI terrace mining before the April 2006 deadline identified in the ARM Plan, it sought amendments to its use permit, the ARM Plan, and the County Surface Mining and Reclamation Ordinance (SMARO) to allow another five years to complete the work. The proposed time extension was evaluated in a complete Subsequent EIR that underwent substantial public review. The Subsequent EIR found that, consistent with the ARM Plan PEIR, the time extension would result in significant and unavoidable impacts related to visual resources and noise. The Subsequent EIR found that all other impacts would be mitigated to less-than-significant, and the Sonoma County Board of Supervisors approved a three-year extension of time on October 7, 2008. In November 2009, the Sonoma County Superior Court, the Honorable Robert S. Boyd presiding, struck down the approval and certification of the Subsequent EIR. The County and Syar have appealed.

Gallo of Sonoma Winery Expansion

Gallo proposed the expansion of winery facilities located on the east side of Dry Creek Road, about 1 mile north of Lytton Springs Road and about 3.5 miles northwest of Healdsburg. Gallo proposed to expand existing winery facilities to accommodate an increase in annual production capacity of wine from 40,000 tons to 65,000 tons. The project included:

- Construction of new barrel cellar building (approximately 70,000 sq. ft.);
- Construction of a 25,000 sq. ft. new operations facility building;
- Construction of a 43,000 sq. ft. new bottling facility;
- Construction of an approximate 10,000 sq. ft. maintenance building;
- Construction of a 6,500 sq. ft. new loading dock area;

- Expansion of barrel storage and fermentation tanks;
- Construction of a new 20,000 sq. ft. canopy and tree covering at the entrance to the existing cellar;
- Modification of facility lighting to conserve energy and reduce glare;
- Implementation of new water-conservation measures; and
- Revised parking plan and vineyard road location.

The Draft EIR identified potentially significant impacts in the following areas: hydrology; water quality; geology, seismicity, and soils; traffic; air quality; noise, aesthetics and visual resources; biological resources; cultural resources; and hazards and hazardous materials (Sonoma County 2002). However, with mitigation measures identified in the Draft EIR, all potential impacts would be reduced to less-than-significant levels. No significant unavoidable impacts were identified.

The Draft EIR identified no known or reasonably foreseeable future projects that would have substantial cumulative impacts with the Gallo project (2002); the cumulative impacts discussion identified the related study-area projects based on the Sonoma County General Plan and the 1989 General Plan EIR and amendments. The analysis included a discussion of the cumulative environmental effects expected to result from the contribution of the Gallo of Sonoma Project to the projects related to the General Plan buildout (by the year 2005). The Gallo EIR recognized that the General Plan was undergoing revision; however, it concluded that substantial changes to the land use designations in Dry Creek Valley were not anticipated.

The County certified an EIR and approved a use permit in May 2006 and the project has been implemented.

Clos du Bois Winery Expansion

Clos du Bois Wines, Inc. proposed to increase the annual production capacity at its existing winery from 1.75 million cases to 3.5 million cases, with a total of 165 employees (Sonoma County 2006). The project, located at 19410 Geyserville Ave. and 910/930 Lytton Station Road, Geyserville, included:

- Construction of an approximate 220,000 sq. ft. production facility;
- Expansion of wine process functions and employee facilities;
- Return offsite barrel aging and processing function to an onsite location;
- Relocation of the existing hospitality and administration offices;
- Relocation and expansion of the existing tasting room/retail sales building;
- Abandonment of the existing process wastewater treatment pond and construction of new process wastewater treatment and storage ponds;
- Abandonment and relocation of the existing sanitary sewage septic tank and leach field area;
- Abandonment of the existing fire protection pond and construction of new steel tanks and a pump house for fire protection water storage (in progress);
- Construction of a new grape processing area and wine storage tanks within existing developed area; and

- Construction of parking for additional employees and site improvements to support the facility expansion.

A MND prepared for the project identified potentially significant impacts in the following areas: aesthetics, hydrology/water quality, noise, air quality, and geology/soils (Sonoma County 2006). However, with mitigation measures identified as part of the MND, all potential impacts would be reduced to less-than-significant levels. No cumulative or long-term impacts were identified that were not fully mitigated. As described in the MND, traffic mitigation fees were required to assist with overall County roadways maintenance.

The County approved the Clos du Bois use permit in May 2006, and the project has been implemented.

Dry Creek Rancheria Economic Development Master Plan (River Rock Casino)

The Dry Creek Rancheria Band of Pomo Indians (Tribe) proposed an expansion of existing gaming-related facilities and an addition of non-gaming facilities at the site of the existing River Rock Casino, located approximately two miles southeast of Geyserville, in unincorporated Sonoma County. The project would consist of the following:

- a casino facility;
- a hotel and spa;
- food and beverage facilities;
- underground parking and storage;
- administrative facilities;
- a plaza;
- balconies and terraces throughout the site;
- retail facilities;
- conference facilities; and
- back of house facilities.

The Tribe prepared an Environmental Study for the Dry Creek Rancheria Economic Development Master Plan (June 2007). The Study purported to evaluate the potential impacts of the Master Plan in the areas of Aesthetics, Air Quality, Biological Resources, Hydrology and Water Quality, Noise, and Transportation/Traffic. Other environmental issues (i.e., Agricultural Resources, Cultural Resources, Geology/Soils, Hazardous Materials, Mineral Resources, Population/Housing, Public Services, and Recreation) were deemed to result in less-than-significant impacts on the environment and thus were not evaluated in the Study. With the exception of long-term, ambient noise associated with the near- and long-term development of the Master Plan, the study claimed all potential impacts (for the stand alone Master Plan and cumulative projects) would be reduced to less-than-significant with the implementation of mitigation measures.

Cloverdale Rancheria of Pomo Indians Fee-to-Trust and Resort Casino Project

The Cloverdale Rancheria of Pomo Indians has proposed to construct and operate a casino and resort project on land off Asti Road in the unincorporated County but within the sphere of influence of and adjacent to the southeast portion of the City of Cloverdale. The project proposes approximately 600,000 square feet of development, including a casino with 2,000 slots, 45 tables, and approximately 52,445 square feet of food and beverage facilities; a five-story, 244-room hotel; a four- to five-story parking garage; a 984-seat convention center; a 1,300-seat entertainment center; and a possible wastewater treatment plant, treatment ponds, and sprayfields. In October 2008, the United States Bureau of Indian Affairs published a scoping report identifying the impacts and alternatives that would be analyzed in a draft environmental impact statement under the National Environmental Policy Act (NEPA).

Saggio Hills Project

The Saggio Hills Project sought destination resort lodging, meeting and spa facilities, residential homes, a community park and trails system, an affordable housing complex, a publicly-owned fire substation, and other elements on an approximately 258.5-acre site located in the City of Healdsburg. An EIR was prepared that found that the project would result in significant and unavoidable impacts related to the short-term loss of vegetation and short-term traffic conditions at the Dry Creek Road/Hwy 101 South ramps intersection. The City of Healdsburg approved the project, but in November 2009 the Sonoma County Superior Court, the Honorable Robert S. Boyd presiding, struck down the approval and EIR certification.

CUMULATIVE IMPACTS

The following discussion analyzes the cumulative impacts of the proposed project combined with the cumulative impacts of recent past, current and reasonably foreseeable future projects, as well as planned development in the county.

This analysis focuses on those effects to which the proposed project would contribute in accordance with CEQA Guidelines Section 15130(a)(1), which states that an "EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

The following discussion summarizes the cumulative impacts analysis presented in Chapter 9 of the ARM Plan PEIR and other documents where relevant or helpful for greater disclosure and public information. The following discussion is a full and independent analysis of cumulative impacts, however, and recognizes that the ARM Plan and PEIR evaluated a different mining method and approach than that of the proposed project. In some cases, the differences in approach would not change the conclusions for cumulative effects. In other cases, the conclusions of the project's contribution to cumulative impacts may be different from that previously identified because of the mining approach and the AMS and REP proposed as part of the project. The impacts analysis is updated with the new information where appropriate. Detailed discussions of cumulative impacts and the project's contribution to cumulative impacts are described below.

Geology and Soils

ARM Plan PEIR and Other Cumulative Project Findings

As noted in the ARM Plan PEIR, no significant cumulative geologic impacts are expected to result from instream mining. None of the mining and reclamation activities considered in the ARM Plan PEIR would produce additional steep slopes, unstable conditions, or related geological impacts that would be cumulatively significant.

Similarly, other cumulative projects would individually result in no impacts, less-than-significant impacts, or less-than-significant impacts on geology and soils.

Syar Instream Mining Project

Please refer to Hydrology and Water Quality below for a discussion of bank erosion.

Section 3.1, “Geology and Soils”, describes potential geology and soil impacts resulting from the proposed project. The project would not create unstable slopes or other significant impacts. As such, the proposed project’s contribution to less than significant cumulative, geologic impacts would be less than significant.

Geomorphology, Hydrology, and Water Quality

ARM Plan PEIR and Other Cumulative Project Findings

As described in the ARM Plan PEIR, gravel-bar skimming has potential for soil loss resulting from bank erosion (Sonoma County 1994). At individual mining sites, the potential loss of soils would be considered less than significant, but if impacts of mining at various locations along the Russian River are considered, the losses could become cumulatively significant. The impact cannot be quantified with available data that distinguishes induced vs. natural erosion of banks. Continued monitoring and evaluation would be required. The ARM Plan’s Stream Restoration Program[1] would be implemented to restore riparian areas that could be damaged by the proposed instream mining. Thus, the ARM Plan PEIR found cumulative erosion impacts would be reduced to less-than-significant levels.

The ARM Plan establishes standards that allow instream mining as long as gravel removal does not result in degradation of the channel (Sonoma County 1994). Compliance with these standards is expected to reduce potentially significant cumulative hydrology impacts resulting from instream mining operations, but perhaps not to less-than-significant levels. Consequently, the ARM Plan requires that instream mining operations must participate in the Stream Restoration Program to compensate for and mitigate potential damage to the riverbanks. The participation in the Stream Restoration Program by mining projects would reduce cumulative hydrological impacts to less than significant.

As discussed in the ARM Plan PEIR, channel levels dropped in the past where instream mining has been most intense and large quantities of gravel have been removed (Sonoma County 1994). Substantial drops in channel elevation occurred primarily within the middle reach of the Russian River, but some minor degradation also occurred within the portion of the Alexander Valley reach north of Jimtown where gravel bar skimming was the most continuous. Lateral erosion of streambanks has also been evident in the Alexander Valley, both within and outside of active mining areas. As noted above, the ARM Plan requires that all instream mining operations participate in the Stream Restoration Program to compensate for potential damage

[1] As described in the ARM Plan PEIR, gravel-bar skimming has potential for soil loss resulting from bank erosion (Sonoma County 1994). At individual mining sites, the potential loss of soils would be considered less than significant, but if impacts of mining at various locations along the Russian River are considered, the losses could become cumulatively significant. The impact cannot be quantified with available data that distinguishes induced vs. natural erosion of banks. Continued monitoring and evaluation would be required. The ARM Plan’s Stream Restoration Program would be implemented to restore riparian areas that could be damaged by the proposed instream mining. Thus, the ARM Plan found cumulative erosion impacts would reduce to less-than-significant levels.

to riverbanks. Therefore, the ARM Plan found cumulative impacts on river channels and banks would be reduced to a less-than-significant level.

Other land uses have affected the hydrology of the Russian River. According to the ARM Plan PEIR, most of the river's floodplain is now devoted to agricultural and urban uses often accompanied by levees and channel encroachments that concentrate winter flood flows and thus increase channel degradation and bank erosion (Sonoma County 1994). Upstream dams have limited the replacement of gravel removed by instream mining, and increased the capacity of flowing water to carry away loose materials. These effects are likely to continue and thus they are likely to exacerbate the effects of instream mining on Russian River hydrology.

As described in the ARM Plan PEIR, groundwater levels in some parts of Sonoma County have been affected by increased levels of pumping needed to support new land uses (Sonoma County 1994). The lowering of the groundwater table also appears to be correlated to the lowering of the Russian River channel and water level. The ARM Plan requires future instream mining permits in the Alexander Valley to monitor water levels in nearby wells, although cumulative effects were considered less than significant.

The Shamrock Mining Operation Project MND identified that project impacts could be cumulative with other mining projects in the Russian River watershed, and thus would necessitate the same types of mitigations identified above (Sonoma County 2000). The Syar Phase VI Terrace Mining Project SEIR determined that the project would result in a less-than-significant impact individually and in the cumulative context on groundwater resources (Sonoma County 2007). The Syar Middle Reach Operations EIR/EIS identified less than significant or significant but mitigable impacts associated with hydrology and channel dynamics, surface water quality, and groundwater under the preferred alternative (Sonoma County 1997). Other cumulative projects would result in no impact, a less-than-significant impact, or a less-than-significant impact with mitigation related to hydrology and groundwater. Based on the analysis provided above, potential impacts from cumulative projects would be considered significant, although individually some of those projects would result in less-than-significant impacts.

Syar Instream Mining Project

The proposed project would implement different mining techniques and would incorporate the AMS, an approach that allows adjustments to the mining methods and extraction volumes prior to the start of mining activities based on the conditions of the study area and proposed gravel mining sites. As discussed in Section 3.2, "Geomorphology, Hydrology and Water Quality", the AMS and supplemental mitigation measures would ensure that hydrological impacts (e.g., bank erosion, alteration of the natural geomorphic characteristics of the channel, etc.) would be less than significant. Although the project's hydrological impacts would be considered less than significant individually, when considered cumulatively with other instream mining (past and future) projects, potential effects would be considered cumulatively significant, consistent with the finding of the ARM Plan PEIR. As such, the project's contribution to hydrological impacts would be cumulatively considerable. To reduce potentially significant cumulative impacts from instream mining projects to a less-than-significant level, implementation of the Stream Restoration Program[2] would be required. The project includes a proposal to carry out a River

[2] Resolution No. 95-0450 of the Sonoma County Board of Supervisors sets initial contribution rates and establishes in-kind mitigation measure for instream and terrace mining pursuant to the Russian River Gravel Mitigation Fund that was established on November 1, 1994 upon the approval of the ARM Plan. The fund consists of four parts, including the Stream Restoration Program (SRP). The SRP addresses significant impacts identified in the PEIR, and consists of three components including bank erosion repair, revegetation, and fish barrier removal.

Enhancement Program (REP) in lieu of payment into the Russian River Gravel Mitigation Fund. The proposed enhancements include habitat creation (i.e., oxbows, alcoves, placement of Large Woody Debris, re-establishing connections to tributaries), prevention of bank erosion, planting of riparian habitat, and eradication of invasive species. The impacts from these activities would be mostly beneficial.

As described in Section 3.2.1.5, groundwater would be monitored as a function of the summer low flow conditions in the river to ensure that potential impacts would be less than significant. The proposed project would not contribute to cumulative impacts.

Vegetation and Wildlife

ARM Plan PEIR and Other Cumulative Project Findings

The ARM Plan PEIR indicated that bar skimming could involve the removal of riparian vegetation of varying ages, heights, and significance (Sonoma County 1994). Past mining has resulted in significant cumulative impact by preventing the development of new riparian forests to replace aging ones. A more significant cumulative loss of wildlife habitat along the Russian River has resulted from the encroachment by agricultural and urban uses. The ARM Plan reduces habitat losses by reducing the area available for future mining, by preserving all substantial existing riparian vegetation, and by facilitating natural revegetation. However, bank erosion resulting from instream operations may continue to cause significant loss of riparian habitat. The ARM Plan identifies the Stream Restoration Program as a way to reduce the loss of riparian vegetation and promote natural regeneration. With the implementation of the Stream Restoration Program, the potential impacts of cumulative projects would be reduced to less than significant.

- Instream mining activities contribute 50% of the estimated annual cost for bank erosion repair, or $25,000; this cost covers repair for erosion of river banks within one-quarter mile upstream and on-quarter mile downstream of instream mining sites, where the bank erosion occurred in the 12 month period following the commencement of mining. The rate of contribution is based further on a per ton basis. Repairing bank erosion on the mining site is the responsibility of the applicant and operator. As an option to the annual contribution, the operator can elect to pay for or perform 50% of any bank erosion repair needed within one-quarter mile upstream and one-quarter mile downstream of the mining site. Site selection and repair design would have to be approved by SCWA.
- The estimated annual cost of revegetation to mitigate impacts from instream mining operations is $10,000. Contributions to the Fund for this purpose will be used to revegetate eroded and repaired banks along the river in the Alexander Valley. If monetary contributions are paid the County will contract out the revegetation work. Revegetation approved by the County can also be performed directly by the operator as a part of bank repair work. As an alternative to paying for or assuming part of the responsibility for bank repair and revegetation within one-quarter mile upstream and one-quarter mile downstream of the mining site, an instream permit applicant may submit a study prepared by a qualified personnel with specific information that demonstrates to the satisfaction of the County that the recommended mining methods and management practices, if adopted as conditions of project approval, will adequately protect adjacent stream banks within the assessed areas, ad taken together with other mitigation required by the ARM Plan and incorporated into the project, would reduce certain potential environmental impacts identified in the PEIR.
- The Fund shall collect 10 percent or $75,000 of the total estimated cost for the design and construction of a fish ladder at the Healdsburg dam. This level of contribution represents the possible effect of future upstream gravel removal on the elevational difference of the dam which causes the need for a fish ladder. The contribution will be spread over approximately five years. If the fish ladder design is not completed and approved within five years or if future hydrological analysis determines that there is no connection between the gravel removal and the need for the fish ladder, the operator's contributions and accrued interest may be refunded. Equivalent in-kind contributions of labor or materials provided in lieu of required monetary contributions may be accepted when there is a written agreement with the County or the SCWA regarding the timing and detail for contribution.

The Shamrock Mining Operation Project MND identified that impacts could be cumulative with other mining projects in the Russian River watershed, and thus would necessitate the same types of mitigations specified in the ARM Plan PEIR (Sonoma County 2000). The Syar Middle Reach Operations EIR/EIS identified less than significant impacts after mitigation associated with terrestrial biological resources (Sonoma County 1997). Other cumulative projects would result in no impact, less-than-significant impact, or less-than-significant impact with mitigation associated with biological resources. Based on the analysis provided above, potential cumulative biological resources impacts from cumulative projects would be considered significant, although individually some of those projects would result in less-than-significant impacts.

Syar Instream Mining Project

The proposed project would implement different mining techniques and would incorporate the AMS, an approach that allows adjustments to the mining methods and extraction volumes prior to the start of mining activities, based on the conditions of the study area and proposed gravel mining sites. The AMS would require avoiding or transplanting significant stands of native riparian vegetation. In addition, the project proposes to remove large stands of nonnative species, which is a beneficial effect. Although the project's biological impacts would be considered less than significant individually (see Section 3.3, "Vegetation and Wildlife"), when considered cumulatively with other instream mining (past and future) projects, potential effects would be considered cumulatively significant without mitigation, consistent with the finding of the ARM Plan PEIR. As such, the project's contribution to biological impacts would be cumulatively considerable. To reduce potentially significant cumulative impacts from instream mining projects to a cumulatively less-than-significant level, implementation of the Stream Restoration Program (see footnote 2 above) would be required. The project includes a proposal to carry out a River Enhancement Program (REP) in lieu of payment into the Russian River Gravel Mitigation Fund. The proposed enhancements include habitat creation (i.e., oxbows, alcoves, placement of Large Woody Debris, re-establishing connections to tributaries), prevention of bank erosion, planting of riparian habitat, and eradication of invasive species. The impacts from these activities would be mostly beneficial.

Fisheries

ARM Plan PEIR and Other Cumulative Project Findings

As described in the ARM Plan PEIR, fishery conditions in the Russian River have been affected by the reduction in gravel recruitment, peak winter flows caused by the numerous dams in the watershed, and changes in streamside vegetation patterns (Sonoma County 1994). Some streamside vegetation and habitat area have also been removed or encroached upon by agriculture and urban uses. Salmonid (i.e., salmon and steelhead) populations have also been affected by fishing activities and habitat conditions in the ocean.

Past instream gravel extraction, especially when mining occurred in or immediately adjacent to the active channel, has contributed to cumulative fishery impacts where high quality habitat was degraded through increased water turbidity, blocked fish passage, removed streamside vegetation, accelerated bank erosion, or removal of spawning gravels (Sonoma County 1994). However, with the ARM Plan standards and policies for future instream operations and the Stream Restoration Program, which would restore and mitigate fishery habitat conditions, the ARM Plan PEIR found cumulative fisheries impacts from instream mining operations would be less than significant.

The Shamrock Mining Operation Project MND identified that project impacts could be cumulative with other mining projects in the Russian River watershed, and thus would necessitate the same types of mitigations specified in the ARM Plan PEIR (Sonoma County 2000). The Syar Middle Reach Operations EIR/EIS identified either less than significant or significant but mitigable impacts associated with fish resources under the preferred alternative (Sonoma County 1997). The Environmental Study for the Dry Creek Rancheria Economic Development Master Plan found that with population increases and subsequent development of the region, as well as the advent of agriculture and mining activities within the Russian River basin, native anadromous salmonids populations have declined (Dry Creek Rancheria Band of Pomo Indians 2007). As stated in the Environmental Assessment, the Master Plan would endeavor to avoid biological cumulative impacts through project design considerations to minimize stormwater quality and meeting discharge requirements consistent with NCRWQCB objectives. Other cumulative projects would result in no impact, less-than-significant impact, or less-than-significant impact with mitigation associated with hydrological effects. Based on the analysis provided above, potential cumulative fisheries-related impacts from cumulative projects would be considered significant, although individually some of those projects would result in less-than-significant impacts.

Syar Instream Mining Project

The proposed project would implement different mining techniques and would incorporate the AMS. As described in Chapter 1, “Introduction and Project Description”, implementation of the proposed AMS would allow annual adjustment of mining activities at the beginning of each operating season based on the river response and natural recharge of aggregates during the previous winter’s high flows as well as habitat enhancement needs. Although the project’s fisheries impacts would be considered less than significant individually (see Section 3.4, “Fisheries Resources”), when considered cumulatively with other instream mining (past and future) projects, potential effects would be considered cumulatively significant, consistent with the finding of the ARM Plan PEIR. The addition of the REP activities to create fisheries habitat via the creation of alcoves and oxbows in the Russian River and stabilize banks and restore riparian habitat would help to alleviate any loss of habitat during the mining season.

The project’s incremental contribution to potentially significant cumulative fisheries impacts would be less than considerable with the implementation of the AMS and supplemental mitigation measures. The project includes a proposal to carry out a River Enhancement Program (REP) in lieu of payment into the Russian River Gravel Mitigation Fund. The proposed enhancements include habitat creation (i.e., oxbows, alcoves, placement of Large Woody Debris, re-establishing connections to tributaries), prevention of bank erosion, planting of riparian habitat, and eradication of invasive species. REP activities are anticipated to have an overall beneficial impact on fisheries.

Cultural Resources

ARM Plan PEIR and Other Cumulative Project Findings

As described in the ARM Plan PEIR, given the locations where the mining activities are designated and the mitigation measures to be applied, it is not expected that significant cumulative cultural resources impacts would occur (Sonoma County 1994). The ARM Plan PEIR also indicated that future growth and development in the County could result in impacts to cultural resources that could be significant unless similar mitigation measures are implemented for rural uses involving ground-disturbing activities that have the potential to disturb buried artifacts. The PEIR concluded that cumulative impacts associated with cultural resources would be considered less than significant.

Individually, construction of the winery projects has the potential to disturb undocumented archaeological or historic resources. As such, conditions or mitigation measures have been identified as part of the above projects to address the potential discovery of these resources. The implementation of these conditions/measures would reduce potential impacts to less than significant levels. The Environmental Study for the Dry Creek Rancheria Economic Development Master Plan did not identify potential impacts to cultural resources. Other mining projects would result in less than significant impacts.

Based on the analysis provided above, cumulative impacts associated with cultural resources from the ARM Plan and other cumulative projects would be considered less than significant.

Syar Instream Mining Project

The proposed project's mining activities are similar to the instream mining activities described under the ARM Plan and the project's contribution to less than significant cumulative impacts would be less than considerable with the mitigation measure identified in this EIR. Cumulative impacts associated with cultural resources would remain less than significant.

Traffic and Circulation

ARM Plan PEIR and Other Cumulative Project Findings

As stated in the ARM Plan PEIR, mining operations allowed under the ARM Plan would be required to contribute to the Aggregate Road Mitigation Fund (Sonoma County 1994). This measure is intended to reduce cumulative traffic impacts associated with mining operations to less-than-significant levels. The ARM Plan PEIR also specified that additional gravel trucks on County roadways associated with mining activities would result in deterioration of the roads (Sonoma County 1994). However, this deterioration can be mitigated by the requirements set forth in the ARM Plan for an aggregate road mitigation fund to finance improvements to roads used as haul routes.

As described in the ARM Plan PEIR, any increase in aggregate-related truck traffic for haul road sectors or intersections with limited capacity could create a significant local impact (generally only in upland areas near quarry sites) (Sonoma County 1994). The ARM Plan PEIR stated that mining operations cannot cause the level of service of a roadway to drop below the level established as the standard in the General Plan.

The Shamrock Mining Operation Project MND identified that impacts of the project could be cumulative with other mining projects in the Russian River watershed, and thus would necessitate the same types of mitigations specified in the ARM Plan PEIR (Sonoma County 2000). The Syar Phase VI Terrace Mining Project MND specified that the project, with proposed mitigation would ensure that it would result in less-than-significant impacts individually and in the cumulative context on roadway levels of service (Sonoma County 2007).

Omni-Means, Ltd, Roseville, California, published a traffic impact report for the Dry Creek Rancheria Economic Development Master Plan (June 2007). As part of that study, cumulative traffic conditions were projected for intersections that provide access to the proposed Casino expansion. Many of these locations were also evaluated in this EIR.

Other cumulative projects would result in no impacts, less-than-significant impacts, or less-than-significant impacts with mitigation related to traffic. Based on the analysis provided above, potential impacts from cumulative projects on roadways from mining projects would be considered significant, although individually some of those projects would result in less-than-significant impacts.

Syar Instream Mining Project

As discussed in Section 3.6, "Traffic and Circulation," implementation of the proposed project would not result in a significant traffic congestion impact, even when evaluated against a very conservative cumulative projection of a 1.5% per year increase in area traffic (which equates to an approximately 30% increase over baseline over the life of the project) due to the potential River Rock Casino Resort and other cumulative development. Section 3.6 discloses that the project's contribution to traffic at the US 101 Southbound off-ramp at Healdsburg Avenue would be significant and cumulatively considerable absent mitigation. However, implementation of Mitigation Measure 3.6-1 would reduce the project's impact to less-than-significant and preserve an acceptable level-of-service at the intersection, even in the face of a likely overstated projection of cumulative development. As a result, with mitigation, the project's cumulative impact would be less than significant.

Section 3.6 also discloses that the project would not significantly impact roads or highways, and includes mitigation to reduce to less-than-significant the project's potential impacts on traffic safety, sight distances, wear and tear on roadways, railroad crossings, and alternative transportation. Implementation of Mitigation Measures 3.6-3a through 3.6-6b would reduce all but one such impact to less-than-significant, and less than cumulatively considerable.

However, Section 3.6 discloses that the project would result in a significant and unavoidable safety impact at the Lytton Station Road curve if Syar uses Haul Route 2 and is unable to acquire the necessary right-of-way to implement Mitigation Measure 3.6-3c. Traffic generated by other cumulative projects also utilizes this curve, and the project impact would thus be significant and unavoidable on a cumulative level, as well. Acquisition of right-of-way and implementation of Mitigation Measure 3.6-3c, by contrast, would improve safety at the Lytton Station Road curve and result in a less-than-significant cumulative impact.

Air Quality

ARM Plan PEIR and Other Cumulative Project Findings

The mining activities allowed under the ARM Plan would result in air quality emissions from vehicle traffic, mining and processing operations, and exposure of soils to wind erosion (Sonoma County 1994). However, the ARM Plan PEIR indicated that given the emissions generated by agriculture, construction, and other non-mining activities, and the [then] current and projected vehicle usage in the County, it is expected that the combined emissions resulting from future aggregate production would not add significant amounts of air pollutants such that significant cumulative air quality impacts would occur.

Table 4-1
Peak Hour Level of Service at Existing Condition, Cumulative 2025 No Project and Cumulative 2025 With Project Impacts along Haul Routes 2 – 8

#	Intersection Location	Peak Hour LOS Level (average delay in seconds) at Intersections															
		Existing Condition		Cumulative 2025 No Project		Cumulative 2025 Haul Route 2		Cumulative 2025 Haul Route 3		Cumulative 2025 Haul Route 4		Cumulative 2025 Haul Route 5		Cumulative 2025 Haul Route 6		Cumulative 2025 Haul Route 7		Cumulative 2025 Haul Route 8	
		A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
1	U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.8)	B (11.4)	C (15.9)	B (13.7)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)	F (79.8)	C (17.3)
2	U.S. 101 northbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.6)	B (11.4)	B (14.3)	B (13.8)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)	C (16.1)	C (15.6)
3	U.S. 101 southbound off-ramp at Lytton Springs Road	B (10.5)	B (12.7)	B (11.6)	C (15.6)	B (14)	C (20.7)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)	B (13.4)	C (21.9)
4	U.S. 101 northbound off-ramp at Lytton Springs Road	A (9.7)	B (10.3)	B (10.4)	B (11.4)	B (11.1)	B (12.3)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)	B (13)	B (15)
5	Healdsburg Avenue at Lytton Springs Road (access to Route 2)	B (10.7)	B (10.8)	B (11.7)	B (12)	B (14.6)	C (17.5)												
6	U.S. 101 southbound off-ramp at Geyserville Avenue	B (10.3)	B (10.4)	B (11.3)	B (11.4)					B (12.9)	B (13)	B (12.9)	B (13)	B (14.4)	C (18.6)	B (14.4)	C (18.6)	B (14.4)	C (18.6)
7	U.S. 101 northbound off-ramp at Geyserville Avenue (access to Route 3)	A (9.1)	A (9.2)	A (9.4)	A (9.6)					A (9.8)	B (10.1)	A (9.8)	B (10.1)	B (10.8)	B (11.5)	B (10.8)	B (11.5)	B (10.8)	B (11.5)
8	Geyserville Avenue at Banti Lane (access to Route 4)	A (10.0)	B (10.1)	B (10.3)	B (10.5)					B (11.9)	B (12.3)	B (11.1)	B (11.3)						
9	Geyserville Avenue at Hamilton Lane (access to Route 5)	A (9.8)	B (10.2)	B (10.4)	B (11)							B (12.3)	B (13.9)						
10	U.S. 101 southbound off-ramp at Canyon Road	A (9.7)	A (9.8)	B (10.2)	B (10.3)									B (11.8)	B (12)	B (11.8)	B (12)	B (11.8)	B (12)
11	U.S. 101 northbound off-ramp at Canyon Road	A (9.5)	A (9.6)	A (10)	B (10.2)									B (10.5)	B (10.7)	B (10.5)	B (10.7)	B (10.5)	B (10.7)
12	Geyserville Avenue at Canyon Road	A (7.4)	A (7.7)	A (7.7)	A (8.1)									A (8.5)	A (8.8)	A (8.5)	A (8.8)	A (8.5)	A (8.8)
13	Geyserville Avenue at access to Route 6																	A (9.5)	A (9.9)
14	Geyserville Avenue at access to Route 7															A (9.5)	A (9.9)		
15	Geyserville Avenue at access to Route 8													A (9.5)	A (9.9)				

Note: Numbers in parentheses indicate seconds of average delay overall at all-way stop controlled intersections and for the worst affected approach at side street controlled intersections
Shaded cells indicate no change from no project condition
N/A = The proposed intersections do not currently exist at this time. They would be connected to public roadways for the purposes of the project.

Back of Table 4-1

The ARM Plan PEIR added that while emissions standards and operational requirements have been established by the BAAQMD, NSCAPCD, and various state and federal agencies to limit air quality impacts by individual uses or facilities, it is possible that the future growth and development allowed by local plans could result in increased total emissions and cumulative non-compliance with ambient standards (Sonoma County 1994). If the two air districts continue to enforce the required controls and implement the adopted air quality maintenance programs, cumulative air quality impacts would be less than significant. However, the ARM Plan PEIR identifies potentially significant cumulative impacts associated with the combination of mining and other developments.

The Gallo of Sonoma Project resulted in construction- and operation-related air quality impacts, including emissions of PM_{10}. However, with mitigation measures identified in the Gallo of Sonoma EIR, such impacts would be reduced to less than significant levels. According to the Clos du Bois Project MND, the project would not result in any significant air-quality impacts except odor, which was mitigated. The Environmental Study for the Dry Creek Rancheria Economic Development Master Plan indicated that potential construction-related air quality impacts would be reduced to less-than-significant with the implementation of a dust abatement program (Dry Creek Rancheria Band of Pomo Indians 2007) and operational-related air quality impacts would be considered less than significant. Both the Shamrock Mining Operation Project and the Syar Phase VI Terrace Mining Project would result in significant but mitigable air-quality impacts (Sonoma County 2000; Sonoma County 2007).

Based on the analysis provided above, cumulative air-quality impacts associated with the ARM Plan and other cumulative projects, including those generated from future growth, would result in potentially significant air quality impacts.

Syar Instream Mining Project

As described in Section 3.7, “Air Quality”, the proposed project would result in significant unavoidable impacts associated with PM_{10} emissions from mining and mining-related activities, even with implementation of numerous dust control mitigation measures. The project’s incremental contribution to cumulative PM_{10} emissions also would be significant on a cumulative level even with adoption of Mitigation Measure 3.7-1. Other air quality impacts would be less than significant on a cumulative level for the reasons stated in Section 3.7. In addition, the project’s contribution to cumulative global climate change impacts would not exceed any published threshold of significance, and its emissions would fall below the draft threshold promulgated by BAAQMD.

Aesthetics

ARM Plan PEIR and Other Cumulative Project Findings

According to the ARM Plan PEIR, instream mining in the Russian River would result in significant visual impacts where mining operations occur in view of river travelers and public bridges (Sonoma County 1994).

Both the winery projects resulted in potentially significant visual quality impacts that required implementation of mitigation measures. These measures reduced potential impacts to less than significant. According to the Environmental Study for the Dry Creek Rancheria Economic Development Master Plan, the project would result in light-and-glare impacts but would not result any cumulative aesthetics impacts (Dry Creek Rancheria Band of Pomo Indians 2007). The Shamrock Mining Operation Project MND identified that project impacts could be cumulative with other mining projects in the Russian River watershed, and thus would necessitate the same types of mitigations specified in the ARM Plan PEIR (Sonoma County 2000). Visual impacts would be considered significant and unavoidable, consistent with the findings of the PEIR. The Syar Phase VI Terrace Mining Project SEIR indicated that it would contribute to cumulative visual impacts consistent with the findings of the ARM Plan PEIR (Sonoma County 2007). The Syar Middle Reach Operations EIR/EIS also identified cumulative significant and unavoidable visual impacts (Sonoma County 1997). Based on the analysis provided above, cumulative aesthetics impacts associated with the ARM Plan and other cumulative projects would be considered significant.

Syar Instream Mining Project

As described in Section 3.8, “Aesthetics,” mining equipment and activities would be visible from the Geyserville Bridge (Highway 128) and from the river (i.e., by boaters). Views of the proposed mining project from public roads would be limited to the Geyserville Bridge and approach roads. Boats or canoes floating down the river would observe the mining operation for a period of not more than 15 minutes, and for the most part would not see the operation at all, given that most, if not all, mining would be behind the head and outside portion of the bar. Mitigation measures such as screening of operations could reduce impacts on scenic resources, but their placement would create a visual barrier that would obstruct the expansive view of the river and result in even greater adverse impacts to the visual landscape. Therefore, impacts on scenic landscape units and scenic corridors would be significant, although temporary. The project’s incremental contribution to cumulative visual impacts would also be cumulatively considerable, per the ARM Plan PEIR. The Board of Supervisors adopted a statement of overriding considerations for cumulative aesthetic effects when it approved the ARM Plan, and would have to do so again to approve the project.

Noise

ARM Plan PEIR and Other Cumulative Project Findings

Noise would be generated by the mining activities contemplated by the ARM Plan. According to the ARM Plan PEIR, the duration and levels of noise generated by future mining operations would be less than that generated by past mining activities (Sonoma County 1994). Because operations that generate noise are generally localized and would be required to conform to the County General Plan Noise Element performance standards and policies and the ARM Plan standards, it is expected that recent past, current and future mining activities would not result in significant cumulative noise impacts.

The ARM Plan PEIR also identified potentially significant cumulative noise impacts from trucks hauling aggregate material even after mitigation measures are applied (Sonoma County 1994).

Individually, other cumulative projects would result in construction- and/or operation-related noise impacts that would mostly be reduced with implementation of mitigation measures. The casino expansion project, however, would result in permanent (significant and unavoidable) increases in the ambient noise environment associated with increased traffic (Dry Creek Rancheria Band of Pomo Indians 2007). The Shamrock Mining Operation Project MND identified that the project’s cumulative impacts would necessitate the same types of mitigations specified in the ARM Plan PEIR (Sonoma County 2000). Noise impacts were considered significant and unavoidable. The Syar Phase VI Terrace Mining Project Subsequent EIR indicated that the re-introduction of truck hauling of materials would contribute to cumulative noise along public haul routes where sensitive receptors may be located, and as such would result in a significant and unavoidable cumulative impact (Sonoma County 2007). Similarly, the Syar Middle Reach Operations EIR/EIS identified significant and unavoidable impacts associated with operations at two sites under the preferred alternative (Sonoma County 1997).

Based on the analysis provided above, cumulative traffic-related noise impacts associated with the ARM Plan and other cumulative projects would be significant.

Syar Instream Mining Project

Section 3.9, "Noise," explains that the project would expose sensitive receptors to noise levels in excess of significance thresholds as a result of mining equipment and heavy-duty truck traffic on both public and private roads. This EIR includes several mitigation measures to reduce potential impacts, but concludes that significant impacts would still occur at several receptors from mining equipment, and one receptor from truck traffic on Geyserville Avenue. The EIR also includes measures that would reduce noise impacts on private roadways to less than significant, but discloses that impacts to two receptors could be significant and unavoidable if the owner(s) and occupant(s) of those receptors object to the proposed measures.

The relevant receptors are also impacted by noise generated by past, present, and probable future activities in the project area. As a result, the project's contribution to those impacts would be significant and unavoidable on a cumulative level, as well. The Board of Supervisors adopted a statement of overriding considerations for cumulative noise impacts when it adopted the ARM Plan, and would need to do so again before approving this project.

Public Services and Utilities

ARM Plan PEIR and Other Cumulative Project Findings

As stated in the ARM Plan PEIR, future gravel mining would not result in significant cumulative public service or utilities impacts (Sonoma County 1994). The ARM Plan acknowledged that the overall growth and development anticipated by the Sonoma County General Plan would generate many impacts on public services throughout the County over time, although the PEIR did not specifically identify a significant cumulative impact.

Other cumulative projects would individually result in no impact, less-than-significant impact, or less-than-significant impact with mitigation on public services and utilities.

Based on the analysis provided above, cumulative impacts related to public services and utilities associated with the ARM Plan and other cumulative projects would be less than significant.

Syar Instream Mining Project

As described in Section 3.10, “Public Services”, the project would not result in any impacts on police and fire protection, school, and park services. The project would result in less than significant impacts associated with an increase in demand for water and wastewater production. The project’s contribution to less-than-significant cumulative impacts related to public services and utilities would be less than considerable. Cumulative impacts would therefore remain less than significant.

Hazards and Hazardous Materials

ARM Plan PEIR and Other Cumulative Project Findings

The ARM Plan required that all operations using hazardous materials or generating hazardous waste comply with federal, state regional and local regulations (Sonoma County 1994). If mining operators comply with these requirements, no significant cumulative public health and safety impacts would be generated by aggregate mining activities. The ARM Plan PEIR stated that because adequate standards are applied to other similar or related uses and to most types of planned future development in the County, cumulative impacts are not anticipated.

Other cumulative projects would individually result in no impact, less-than-significant impact, or less-than-significant impact with mitigation related to hazards and hazardous materials.

Based on the analysis provided above, cumulative impacts related to hazards and hazardous materials associated with the ARM Plan and other cumulative projects would be considered less than significant.

Syar Instream Mining Project

As described in Section 3.11, “Hazards and Hazardous Materials”, Syar would implement a Spill Prevention Fueling and Lubrication Plan (SPFL) in the event of an accidental discharge of hazardous materials to ensure that potential impacts would be reduced to less-than-significant levels. As such, the proposed project’s contribution to less than significant cumulative impacts would be less than considerable. Cumulative impacts related to this area would remain less than significant.

Energy and Natural Resources

ARM Plan PEIR and Other Cumulative Project Findings

The ARM Plan PEIR states that mining operations allowed under the ARM Plan would have a significant cumulative impact on energy and fuels although the energy requirements are minimal compared with other non-mining activities occurring within the County (e.g. agriculture, commercial, transportation) (Sonoma County 1994). It further states that all future development in the County would have a cumulatively significant impact on energy and fuels because additional resources would be required to serve the needs of the growth anticipated by adopted general plans. In addition, cumulative impact of this development is the consumption and permanent loss of fossil fuels.

None of the other cumulative projects discuss impacts associated with the consumption of energy.

Based on the analysis provided in the ARM Plan PEIR, cumulative impacts related to energy consumption would be considered potentially significant associated with future development.

Syar Instream Mining Project

As described in Section 3.12, “Energy”, the project would require the use of diesel associated with the operation of mechanical equipment and haul trucks, which would result in a less-than-significant impact. The project’s impacts would be less than significant and less than considerable on a cumulative level.

Land Use and Recreation

ARM Plan PEIR and Other Cumulative Project Findings

According to the ARM Plan PEIR, instream mining operations are permitted in agricultural areas, but the actual mining would occur on gravel bars not suited for crop production (Sonoma County 1994). No structural development would occur on gravel bars. Fishing, off-road vehicle use, and other temporary recreational activities are the only other common uses on the gravel bars in the river. Significant cumulative impacts on agriculture are not expected from instream mining.

The ARM Plan designated approximately 16 miles of the Russian River in the Alexander Valley reach for instream operations (Sonoma County 1994). The ARM Plan PEIR stated that mining operations could have a significant cumulative impact on recreation, especially canoeing and sport fishing. The ARM Plan calls for implementation of a Recreation Enhancement Program for the Russian River to reduce cumulative recreational impacts to less-than-significant levels. The Recreation Enhancement Program (see footnote 2 above) would provide for improved access and facilities for existing canoe and sport fishing uses.

The Syar Middle Reach Operations EIR/EIS identified significant and unavoidable impacts associated with alteration and recreational value of the Russian River in the rural areas around the project area as well as affect the recreation activities of Healdsburg residents and visitors under the preferred alternative (Sonoma County 1997), consistent with the conclusion of the ARM Plan EIR. Other cumulative projects would result in no impact, less than significant impact, or less-than-significant impact with mitigation on recreational uses.

Based on the analysis provided above, cumulative impacts would be less than significant if mining operators participate in the Recreation Enhancement Program.

Syar Instream Mining Project

As discussed in Section 3.13, “Land Use”, the proposed project would not convert farmlands to non-agricultural uses and would not result in impacts to agricultural uses, similar to the conclusion of the ARM Plan PEIR.

Impact 4-1. The project’s contribution to cumulative recreation impacts would be considerable if the project does not participate in the Recreation Enhancement Program, as required by the ARM Plan and mining ordinance.

As described in Section 3.14, “Recreation”, the proposed project would result in less-than-significant impacts on recreational uses due to the timing of mining activities and adherence to operating standards that allow continued recreation. Although the project’s individual impacts are less than significant, its contribution to cumulative impacts would be considerable if the project does not participate in the Recreation Enhancement Program, as required by the ARM Plan and mining ordinance. The ARM Plan found that recreation impacts would not be significant on a project-by-project basis, but that collectively mining operations along the river corridor, and particularly in the Alexander Valley, could result in a significant cumulative reduction in the quality of the river recreation experience by increasing noise, dust and traffic and by impairing views of equipment, excavated areas, stockpiles, and vegetation clearing within the river corridor. The ARM Plan and mining ordinance required payment of mitigation fees towards the Recreation Enhancement Program to mitigate this potentially significant cumulative impact.

Mitigation Measure

4-1 Syar shall contribute a fair share towards the County's Russian River Gravel Mitigation Fund Recreation Enhancement Program or offer to dedicate to the County an access easement of equal value in-lieu of the fair share.

Impact Significance After Mitigation

Mitigation Measure 4-1 would substantially reduce the cumulative impacts of mining and enhancement activities on recreation to a less than significant level.

4.3 IRREVERSIBLE ENVIRONMENTAL CHANGES OF THE PROJECT AS PROPOSED

According to Section 15126.2(c) of the CEQA Guidelines, impacts associated with a proposed project may be considered significant and irreversible if:

- The project would involve a large commitment of non-renewable resources (such as fossil fuels or lumber).
- The primary and secondary impacts of a project would generally commit future generations to similar uses (such as a highway improvement that provides access to a previously inaccessible area).
- The project involves uses in which irreversible damage could result from potential environmental accidents associated with the project.

As noted in the ARM Plan PEIR, the removal of gravel from the Russian River would not deplete a non-renewable resource. The project's primary purpose is to produce a sustainable yield of aggregate while simultaneously implementing the objectives of the ARM Plan. One of the project objectives is to achieve this goal. This objective would be accomplished through implementation of the AMS, which would allow annual adjustment of extraction activities at the beginning of each operating season based on the natural recharge of aggregates during the previous winter's high flows. Because the AMS approach would allow the gravel bars to replenish before further gravel extraction would occur at mined locations, the proposed project would not adversely affect instream gravel resources.

The proposed project would result in irretrievable and irreversible commitment of natural resources through direct consumption of fossil fuels for the operation of mining equipment and worker vehicles. Since the project would provide a local source of PCC aggregates and eliminate the need to haul aggregate from longer distances, the overall use of fossil fuels would be reduced. In addition, because the project would have a limited lifespan (15 years) and would not commit future generations to increases in fuel consumption, this impact would be less than significant.

As discussed in Section 3.11, "Hazards and Hazardous Materials", the project could result in accidental spills of hazardous materials in the Russian River during instream mining activities. As noted in Section 3.11, however, the SPFL Plan shall be updated and implemented to reduce potential impacts associated with accidental spills to less-than-significant levels. As such, the project would not result in irreversible damage to the environment from accidental discharges of hazardous materials.

4.4 SUMMARY OF EFFECTS FOUND NOT TO BE SIGNIFICANT

The environmental effects of the proposed project are identified and discussed in detail in Chapter 3, Environmental Setting, Impacts, and Mitigation measures, and are summarized in Chapter 2, Summary. Except for significant unavoidable effects identified above, all other identified significant environmental effects of the proposed project would be less than significant with mitigation.

4.5 PROJECT ALTERNATIVES

Pursuant to CEQA Guidelines Section 15126.6, "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

CEQA Guidelines require that an EIR briefly describe the rationale for selecting the alternatives to be discussed (Section 15126.6(a)), and identify any alternatives that were considered by the lead agency but were rejected as infeasible (Section 15126.6(c)). The following factors were used to identify feasible alternatives to the proposed project:

- The extent to which the alternative would avoid or lessen any of the identified significant adverse environmental effects of the project;
- The feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, consistency with regulatory limitations, and whether the project sponsor can reasonably implement the alternatives;
- The appropriateness of the alternative in contributing to a "reasonable range" of alternatives necessary to permit a reasoned choice; and
- The requirement of *CEQA Guidelines* to consider a "No Project" alternative as well as an "environmentally superior" alternative (*CEQA Guidelines*, Section 15126.6).

Alternatives must feasibly attain most of the basic objectives of the project. As described in Chapter 1, the objectives of the proposed project include:

- Produce aggregate from an ARM-Plan designated site to implement the State and County policies of meeting local aggregate demand with local resources;
- Extend the life of permitted, locally-produced sources of high-quality aggregate that meets specifications for use in local infrastructure projects;
- Manage the skimming approach on an ongoing basis to provide a sustainable yield of aggregate while enhancing the biological and hydrological functions of the Russian River;
- Conserve valuable agricultural lands and help protect public infrastructure by maintaining flood channel capacity and reducing bank erosion through the removal of excess aggregate from gravel bars;
- Conserve quality riparian habitat, enhance fisheries, and remove invasive plant species by utilizing unique skimming techniques in selected locations; and
- Avoid traffic, air quality, and other environmental impacts associated with importing aggregate from locations outside of Sonoma County.

ALTERNATIVES CONSIDERED BUT REJECTED

Other alternatives were considered for inclusion in this EIR, but were rejected because they would not meet most of the project sponsor's basic objectives, would not avoid or substantially lessen the potential impacts of the proposed project, and/or were considered infeasible, as described below.

Gravel Mining Elsewhere on the Russian River

This alternative would be similar to the proposed project, with the exception of the location of the gravel bars mined annually. Syar would mine aggregate resources along a different reach of the Russian River in accordance with the methods, standards, and AMS identified under the proposed project, and would maintain the cap of 350,000 tons of aggregate per year. The ARM Plan permits multi-year instream mining on certain designated stream sectors, as follows: Alexander Valley Reach – Cloverdale Area; Alexander Valley Reach – Asti Area; Alexander Valley Reach – Geyserville Area (location of proposed project); Alexander Valley Reach – Jimtown Area (location of proposed project); portions of Big Sulphur Creek; and portions of Austin Creek, Sonoma Creek; and Gualala River. Syar is currently mining its vested rights on the Middle Reach of the Russian River, but does not own or have vested rights to any other designated sector. Instead most of the other sectors are owned by Syar's direct competitors. Permits for instream aggregate extraction in non-designated stream areas are only issued as one-year permits and only allow extraction once in three calendar years in any location. Due to the lack of vested rights/ownership and ARM Plan restrictions, this alternative is not feasible and would not meet project objectives.

ASSESSMENT OF PROJECT ALTERNATIVES

The alternatives selected for analysis differ in the gravel mining operating standards (e.g., techniques and duration) as well as extraction volume. Generally, the impacts under different alternatives would vary primarily in intensity and severity, and the level of significance of environmental impacts would remain the same. However, Alternative 1 - No Project, and Alternative 4 – Gravel Mining at a Lower Volume, would avoid some of the significant unavoidable impacts resulting from the proposed project.

Alternative 1 – No Project

The "no project" alternative is defined as "what would reasonably be expected to occur in the foreseeable future if the project were not approved." (CEQA Guidelines 15126(e)(2).) CEQA Guidelines 15126.6(e)(1) states that "[t]he purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." This EIR identifies a No Project Alternative, under which Syar would not implement the project as proposed.

The existing conditions for this alternative would be the same as that described for the proposed project in Chapter 3 of this Draft EIR, where no current mining activities occur. Under this alternative, Syar would not conduct any mining activities within the proposed reach of the Russian River between Gill Creek and Jimtown Bridge. As such, none of the environmental effects identified for the proposed project described in Chapter 3 would occur. The conditions within the Russian River would continue to be defined by the forces of nature (storm events during the winter) as well as any land use changes adjacent to and upstream of the study area.

The demand for high quality aggregate would continue to exist within the County and alternative sources of gravel would be required. The importation of aggregate from outside the County would result in indirect environmental effects including an increase in traffic congestion, air emissions and fuel use to transport aggregate material. Alternative 1 – No Project would not meet the objectives of the project, including the avoidance of traffic, air quality, and other environmental impacts associated with importing aggregate from locations outside of Sonoma County, nor the production of aggregate from an ARM Plan designated site to implement the State and County policies of meeting local aggregate demand with local resources.

Geology and Soils

Because mining of sand and gravel would not occur, project generated impacts to soils and geologic resources would not occur. The study area would continue to be governed by forces of nature, including winter storm events. However, topographic alteration and potential loss of soils would be redirected to other mining sites at undetermined locations. The proposed volume of aggregate would be substantial, and thus it may be assumed impacts on geology and soils at other sites could be significant.

Geomorphology, Hydrology, and Water Quality

Under this alternative, the study area would not be actively managed for gravel and sand extraction. As such, the changes in the geomorphology and hydrology of the Russian River in the study area would continue to be shaped by the forces of nature (e.g., winter storm events) and land use changes in the watershed. As the river actively establishes its equilibrium based on external forces, the main channel would likely continue to meander in the floodplain and gravel bars would likely migrate from one bank to another over time. Erosion of some banks would likely continue to occur, possibly resulting in encroachment on adjacent farmland and potential impacts to nearby structures (e.g., bridges). The river may continue to aggrade through increased deposition of sand and gravel, which has the potential to result in flood hazards upstream as flood capacity decreases.

Groundwater levels would continue to be affected by water level of the river as well as the rate of withdrawal from existing agricultural and domestic uses.

Vegetation and Wildlife

Because mining activities (vegetation removal, skimming, bridge installation, etc.) would not occur along the Russian River or their tributaries (north of Alexander Valley Road), sensitive vegetation communities/habitats or their special status plant, wildlife, and aquatic species would not be removed, disturbed or degraded through such operations. In addition, County-protected trees would not be removed. However, the potential benefits associated with the project would also not occur. These benefits include the removal of nonnative plant species, such as the giant reed, and potential creation of wetlands habitat (from implementing alcove and oxbow restoration techniques.

Fisheries

As discussed above, the conditions under Alternative 1 would be largely defined by the forces of nature and land use changes in the watershed. Under this alternative, the reach of the Russian River within the study area would continue to provide certain habitat values for fisheries resources. Habitat value and fish populations would be determined by the prevailing conditions and influences. However, this alternative would not provide any of the benefits that would be created with alcoves, oxbows and other project elements.

Cultural Resources

Under this alternative, no mining activities (including removal of vegetation and sand and gravel extraction) would occur. As such, the potential for encountering any unrecorded cultural resources, including human remains, would not occur.

Traffic and Circulation

As this alternative would not involve the transportation of aggregate between the study area and the Syar's aggregate processing plant in Healdsburg, the local traffic conditions from the study area access roads to Healdsburg would not change. However, the import of aggregate from outside Sonoma County would require transportation via haul trucks. Depending on the source location of the imported aggregate, traffic could change and congestion may increase. The level of change cannot be determined with precision as a source for the importion of high-quality aggregate has not yet been identified.

Air Quality

Without the use of any mechanical equipment or haul trucks, this alternative would not generate criteria air pollutant and toxic air contaminants at the proposed gravel bars or along haul routes. Sensitive receptors within the study area would not be affected by additional air pollutant emissions and this alternative would not generate emissions in excess of NSCAPCD standards. However, a replacement source of aggregate could result in substantial increases in vehicular emissions, particularly diesel PM related to longer truck hauls from out of County areas. Although an increase in diesel PM emissions related to hauling would be expected to increase, PM_{10} emissions, including fugitive dust, soot, and smoke from mobile and stationary sources, mining operations, and natural windblown dust, could be shifted to the off-site mining location. In addition to diesel PM emissions, including acrolein, CO_2 emissions may also increase under this alternative associated with the import of aggregate material via haul trucks from other areas. An increase in CO_2 emissions would result in contributions to global climate change beyond that identified for the proposed project from increased hauling.

Aesthetics

This alternative would not result in temporary visual changes from public viewpoints associated with mining activities under the proposed project. The existing views of the Russian River would be maintained as current conditions.

Noise

This alternative would not result in noise or vibration to sensitive receptors near the gravel bars and along proposed haul routes.

Public Services and Utilities

This alternative would not use groundwater for dust control or reclamation activities. In addition, as no mechanical equipment would be used, the potential for igniting fire and consequent hazard to people or structures from fire would not occur.

Hazards and Hazardous Materials

Because this alternative uses no mechanical equipment, the potential for accidental release of hazardous materials would not exist. As such, no impacts associated with hazards and hazardous materials would occur.

Energy

Although diesel fuel consumption associated with the use of mechanical equipment and haul trucks for gravel mining at the study area and hauling activities would not occur under this alternative, such consumption would be expected for the import of aggregate from other source areas. However, similar to the proposed project, the increase in such fuel consumption is not expected to result in significant effects.

Land Use

This alternative would not fulfill the intentions of the ARM Plan, which allows and explicitly contemplates instream mining along the proposed reach of the Alexander Valley.

Recreation

Recreation activities (boating, fishing, wildlife viewing) along the river would continue as current conditions.

Growth Inducement

The No Project Alternative would not induce growth.

Cumulative Effects

Because this alternative does not propose any physical changes to the environment, it would not occur simultaneously with other projects in the vicinity to result in cumulative effects.

Alternative 2 – Gravel Mining In Compliance with the ARM Plan

Alternative 2 proposes compliance with all of the operating standards identified in the ARM Plan, including the mining techniques, overall duration of mining, and hours of operation. The ARM Plan objectives would be consistent with those identified for the proposed project, with the exception that Alternative 2 would not include opportunities to enhance the biological and hydrological functions of the Russian River through implementation of specific REP techniques such as the oxbow and alcove. The objectives of this alternative relevant to instream mining, consistent with the ARM Plan, include:

- Objective 4: Manage instream resources on a sustained yield basis for high quality uses in a manner which reduces bank erosion, maintains flood flow capacities, protects adjacent uses, and minimizes impacts on fisheries, vegetation, and wildlife;
- Objective 5: Continue and expand monitoring programs so that more information is available for future decisions about terrace and instream impacts and alternative management policies and approaches;
- Objective 6: Reevaluate gravel extraction methods and production periodically to assess options which would further reduce environmental impacts and land use conflicts or better meet the County’s aggregate needs;

- Objective 9: Encourage the retention of locally produced aggregate for uses within Sonoma County.

In addition, the operating standards for instream mining as stated in ARM Plan were based on the following specific objectives:

- Protection of instream biologic resources and the riparian corridor;
- No net long-term downgrading of the channel;
- No reduction in the flood capacity of the channel; and
- Minimum interference with the location and shape of the channel.

Under this alternative, Syar would mine aggregate resources along the proposed reach of the Russian River in accordance with the countywide and instream mining operational standards and timeline defined by the ARM Plan. These operating standards are identified in Chapter 7 of the ARM Plan and summarized in Chapter 1, Introduction and Project Description, of this Draft EIR. Specifically, mining would utilize the process of gravel bar skimming in accordance with the ARM Plan requirements for, among other things, the maintenance of the upstream portion of each gravel bar and prohibition on gravel removal within an outer bank setback defined as the greater of either 30 feet or 2.5 times the height of the outer bank.

Gravel mining under the ARM Plan results in mining activities with the same seasonal schedule (June 1 through November 1), but with an overall shorter duration of time – 10 years. Mining operations would be permitted six days a week from 6 a.m. to 10 p.m. The ARM Plan allows the County to limit the amount of materials that can be removed from any permitted instream mining on the basis of monitoring data. The maximum extraction volume would be based on the net accumulation of aggregate, and does not include a specific volume.

Compared to the proposed project, potential effects would be shorter in the overall duration (10 years instead of 15), but would be longer during the operating season, to 10 p.m. (instead of 9:30 p.m. according to the proposed project) throughout the work week and may occur on Saturdays (instead of weekdays only according to the proposed project). This alternative has the potential to increase land use disturbances (from increased noise, dust, traffic) to surrounding land uses during the operating season and permit term. Mining activities under Alternative 2 would strive to minimize potential adverse effects. However, this alternative does not include the REP activities to enhance the biological and hydrological environment within the river. After mining has been completed, reclamation would occur. Vegetation may be transplanted to the buffer zones along the low-flow channel, upper bar buffer or bank.

Geology and Soils

The ARM Plan PEIR evaluated potential impacts on geology and soils, but identified no adverse impacts related to instream mining.

Geomorphology, Hydrology, and Water Quality

The ARM Plan PEIR identifies potentially significant impacts associated with the following:

- Lowering of the channel thalweg elevation and incision of the channel due to readjustment of the river channel to land use changes in the watershed, construction of dams, past mining activities and future instream gravel mining operations. Downcutting of the channel could result in downcutting of tributaries and increased bank erosion;

- Further downcutting of the Russian River channel from incision and increased bank erosion in tributaries as they degrade to meet a lower base level;
- Increase bank erosion and resulting loss of agricultural soils, increased sedimentation, loss of riparian vegetation, and loss of fishery habitat; and
- Creation of a wide, shallow low-flow channel that can elevate water temperatures.

To reduce potentially adverse impacts to less-than-significant for some of the impacts identified above, the ARM Plan PEIR identifies mitigation measures that limit instream extraction to more closely match the sustained yield, require contribution to the Stream Restoration Program, establish setbacks, protect riparian habitat vegetation, and require installation of erosion control techniques. The ARM Plan would reduce all potential site-specific and cumulative impacts above to a less-than-significant level. However, mining per the ARM Plan would not include the benefits of the proposed project which is designed to enhance geomorphic processes that scour pools and increase riffle quality. The oxbows and alcoves proposed as part of the mining process will also create additional complexity in the river channel and provide habitat for fish. The proposed project includes bank stabilization and other enhancements that would help prevent bank erosion while maintaining or enhancing valuable riparian vegetation.

Vegetation and Wildlife

The ARM Plan PEIR identifies the potential for temporary and/or permanent losses of habitat. Mitigation measures are proposed to increase setbacks and reduce areas of instream operations. It is possible that on-site mitigation would not fully mitigate adverse impacts, and off-site mitigation would be necessary in nearby riparian areas to fully compensate for habitat loss. As such, participation in the Stream Restoration Program would be required. With the mitigation measures identified in the ARM Plan PEIR, impacts would be reduced to less-than-significant levels. The mitigation measures would be applicable to Alternative 2.

Although all vegetation and wildlife impacts would be mitigated to less than significant levels in Alternative 2, this Alternative would not include Syar's proposal to create additional wildlife habitat in the lower Alexander Valley reach through the creation of oxbows and alcoves, among other activities. The lack of a REP or similar restoration activities in Alternative 2 means that the benefits to vegetation and wildlife resources found in the proposed project would not occur.

Fisheries

The ARM Plan PEIR identifies potentially significant impacts on fisheries resources from increases in bank erosion, water temperature, sedimentation, loss of cover and spawning habitat, reduction in food supply, increases in potential stranding of juvenile fish, and interference with migratory patterns. Mitigation measures include restrictions on mining activities, setbacks, maintenance of existing riparian vegetation, limitation on the seasonal timing of mining, establishment of stream crossing standards, site inspections, and monitoring. With implementation of the mitigation measures identified in the ARM Plan PEIR, potential effects on fisheries resources would be reduced to less-than-significant levels. The mitigation measures would be applicable to Alternative 2.

Although fisheries impacts would be mitigated to less-than-significant levels in Alternative 2, this Alternative would not include Syar's proposal to create additional fisheries habitat in the lower Alexander Valley reach through the creation of oxbows and alcoves and streambank revegetation, among other beneficial activities. The lack of a REP or similar restoration activities in Alternative 2 means that the benefits to vegetation and wildlife resources found in the proposed project would not occur.

Cultural Resources

The ARM Plan PEIR identifies the potential for adverse impacts to cultural resources as a result of ground clearing, aggregate removal or associated processing, transportation activities and reclamation activities. A mitigation measure to address the procedures to follow in the event of a find of cultural resources would reduce potential effects to less than significant is provided. The conclusion and mitigation measure would be applicable to Alternative 2.

Traffic and Circulation

The ARM Plan PEIR specifies that increases in gravel truck traffic and projected increases in other traffic would produce significant operational and safety impacts on selected County and State roadways by the year 2010. To reduce potential effects to less-than-significant levels, the mitigation measure requires participation in the Aggregate Road Mitigation Fund to provide funding for maintenance of and overall improvements to those roadways that would be adversely affected. The conclusion and mitigation measure would be applicable to Alternative 2.

Although the Syar could perform mining operations on six days of the week instead of the proposed five days a week, daily increase in traffic is not expected to be considerable due to that additional day. The conclusion and mitigation measure would be applicable to Alternative 2.

The main difference between the proposed project and Alternative 2 is related to the maximum extraction amounts allowed under each alternative. Because there is no maximum extraction volume identified in the ARM Plan, it is possible that mining under Alternative 2 may be more or less than the 300,000 tons average per year (with a maximum of 350,000 tons per year) proposed for the project. This would result in a proportional increase or decrease in the number of daily haul truck trips than that identified for the proposed project. Under Alternative 2, it is likely that in some days and in some years, traffic impacts would be worse than the proposed project.

Air Quality

The ARM Plan PEIR identifies increases in localized emissions of CO at nearby intersections associated with increases in the volume of vehicles (primarily haul trucks traveling to and from the mining sites). The mitigation measure identified in the ARM Plan PEIR consists of conducting project-level traffic/air quality analyses to determine the impact. Where impacts would remain significant, actions must be taken to reduce this impact. The impact would remain significant unless the operator could verify that exceedances of federal and State standards would not occur after mitigation. Implementation of this mitigation measure would reduce impacts to less-than-significant levels.

The ARM Plan PEIR did not specifically evaluate emissions of criteria pollutants from instream mining activities. The air quality effects under Alternative 2, including the increase in other air pollutants emissions (e.g., dust) would likely be similar to the proposed project's emissions, as mining operations would utilize the same types of equipment and result in hauling activities. The main difference between the proposed project and Alternative 2 is related to the maximum extraction amounts allowed under each alternative. Because there is no maximum extraction volume identified in the ARM Plan, it is possible that mining under Alternative 2 may be more or less than the 350,000 maximum tons per year proposed for the project. This would result in a proportional increase or decrease in air pollutant emissions, including PM_{10} and CO_2. If Alternative 2 produces the same or higher volumes of sand and gravel per year, it would result in PM_{10} emissions above the recommended standards of NSCAPCD, a significant and unavoidable impact. Additionally, diesel and CO_2 emissions related to haul truck trips could be greater than for the proposed project. Under Alternative 2, it is likely that in some days and in some years, air quality impacts would be worse than the proposed project.

Aesthetics

The ARM Plan PEIR identifies potential visual impacts for instream operations in scenic areas. The mitigation measure identified in the ARM Plan PEIR indicates that additional mitigation is possible at some sites with vegetation and berms although some gravel mining sites would continue to be visible to the public. Similar to the proposed project, Alternative 2 will result in significant visual impacts for specific bars. This is a limited duration impact but no suitable mitigation measures were identified. Therefore, both Alternative 2 and the proposed project would result in significant unavoidable visual impacts.

Noise

The ARM Plan PEIR identifies increases in ambient noise levels along haul routes associated with the increase in the volume of trucks traveling to and from the mining sites. Although mitigation measures were identified to provide restrictions on mining related activities and roadway and adjacent developments would include methods to reduce noise, significant unavoidable impacts may still occur. The mitigation measures identified in the ARM Plan PEIR include limiting the hours of construction, the number of trucks per hour per day, and the routes used, as well as encouraging the use of air brakes. The ARM Plan PEIR also noted that ambient noise levels may decrease on roadways associated with instream operations as production from this source decreases. Similar to the proposed project, noise from project operations and haul trucks under Alternative 2 would be significant and unavoidable. Compared to the project, noise levels in Alternative 2 may be longer due to the longer daily hours of operation (mining operations would be permitted six days a week from 6 a.m. to 10 p.m. instead of the proposed five days a week from 6 a.m. to 9:30 p.m.) and the greater number of truck trips along the haul routes.

Public Services and Utilities

No adverse impacts associated with public services and utilities were identified in the ARM Plan PEIR for instream mining activities.

Similar to the proposed project, Alternative 2 would not result in increased water consumption and wastewater production that would exceed the available supply or necessitate improvements. As such, potential impacts would be considered less than significant.

Hazards and Hazardous Materials

The ARM Plan PEIR identifies the potential for public safety effects associated with the storage and use of diesel fuel and other hazardous materials at the mining sites. A mitigation measure requiring the implementation of a SPCC Plan would reduce potential adverse effect to a less-than-significant level. The conclusion and mitigation measure would be applicable to Alternative 2.

Energy

Impacts associated with energy consumption would likely be similar to that of the proposed project, as diesel-powered mechanical equipment would be used for mining activities. Potential effects would be considered less than significant.

Land Use

This alternative would be consistent with the MR zoning, in that it would allow mining to occur within an area contemplated for such activities. Mining operations in Alternative 2 would be fully consistent with the ARM Plan policies and guidelines, such that no land use impacts would result.

Recreation

The ARM Plan PEIR identifies potential recreation impacts such as reduction of stream access, creation of unaesthetic conditions, noise, and dust, disruption of wildlife habitat, and conflicts with recreationists on public roads used as gravel haul routes. Alternative 2 would result in similar recreation impacts as the proposed project.

Growth Inducement

As discussed in the ARM Plan PEIR, due to the small contribution of aggregate mining to the economic base, the ARM Plan and the future mining allowed by it would not induce growth in the County. In addition, future aggregate mining is not expected to encourage any development or growth in addition to, or in conflict with, locally adopted general plans. As such, Alternative 2 would not result in any growth inducement effects.

Cumulative Effects

Cumulative impacts would be the same as the proposed project.

Alternative 3 – Proposed Project with a 10-Year Time Period

Alternative 3 would reduce the duration of most of the significant impacts identified under the proposed project (from 15 years to 10 years), and comply with the ARM Plan limitation on permit duration, while meeting all of the project objectives.

This alternative is the same as the proposed project with the exception of the duration of mining. Syar would mine aggregate resources along the 6.5-mile Alexander Valley reach of the Russian River in accordance with the methods, standards, and AMS identified under the proposed alternative in Chapter 1, Introduction and Project Description. Similar to the proposed project the annual volume of extraction is capped at 350,000 tons of aggregate per year. However, the permit would impose the ARM Plan's 10 year limit on mining. In general, impacts associated with increased dust, noise, and traffic, would be the same in kind and intensity as the proposed project, because the annual extraction volume would remain the same under this alternative. However, mining under this alternative would reduce the overall volume of extraction over the full period of the project and would disrupt adjacent sensitive receptors for a shorter overall period of time. Similarly, significant unavoidable impacts (PM10 emissions, project operation and truck hauling noise, etc.) would occur under Alternative 3 but would last five years less than under the proposed project. For most of the remaining environmental issue areas (e.g., cultural resources, energy, and recreation), the timeframe of the mining permit would not change the level of impact. The amount of restoration to be completed by the REP included in the proposed project is based on the extraction volume. Since the extraction volume is reduced under Alternative 3, the amount of restoration would be reduced to approximately two-thirds of that in the proposed project. This would result in reduced beneficial impacts from habitat restoration, bank stabilization, and infrastructure protection.

Geology and Soils

Alternative 3 would result in impacts similar to that of the proposed project described in Section 3.1, "Geology and Soils", of this Draft EIR.

Geomorphology, Hydrology and Water Quality

Alternative 3 would result in impacts similar to those of the proposed project described in Section 3.2, "Geomorphology, Hydrology and Water Quality", of this Draft EIR. Upon completion of the project after year 10, natural forces of flooding events would define the dynamics of the river system.

Vegetation and Wildlife

Alternative 3 would result in impacts similar to those of the proposed project described in Section 3.3, "Vegetation and Wildlife", of this Draft EIR, with the exception that the potential removal and loss of biological resources would occur for a shorter period of time compared to the proposed project. The shorter timeframe is likely to result in; either fewer gravel bars mined overall or some bars being mined only once as gravel bars may not have sufficient time to replenish for further mining (assuming a replenishment/recovery cycle of six years). As such, the potential for the removal and loss of sensitive habitats, special-status plant and wildlife species and other biological resources would be reduced compared to the proposed project. As with the proposed project, the AMS would be implemented to avoid the removal of considerable stands of native riparian vegetation, thus reducing potential effects associated with this loss. REP efforts under Alternative 3 would occur and reduce or fully compensate for habitat loss. But because the REP activities would be lessened (due to being based on overall extraction amounts), fewer restoration projects are likely to occur. If the number of bars mined under Alternative 3 were similar to the proposed project, the overall ratio of restoration efforts to impacts would be decreased. Thus, over the long term, vegetation and wildlife resources would be impacted more under Alternative 3 than the proposed project.

Fisheries

Alternative 3 would result in impacts similar to those of the proposed project described in Section 3.4, "Fisheries", of this Draft EIR. Upon completion of the project, the changing river system would determine the availability of habitat for fisheries resources. The shorter timeframe is likely to result in; either fewer gravel bars mined overall or some bars being mined only once, as gravel bars may not have sufficient time to replenish for further mining (assuming a replenishment/recovery cycle of six years). As such, the potential for a changing river system (impacts on riffle and pool habitat) is reduced. REP efforts under Alternative 3 would occur and reduce and compensate for habitat loss. But because the REP activities would be lessened (due to being based on overall extraction amounts), fewer restoration projects are likely to occur. If the number of bars mined under Alternative 3 were similar to the proposed project, the overall ratio of restoration efforts to impacts would be decreased. Thus, over the long term, fisheries resources could be impacted more under Alternative 3 than the proposed project.

Cultural Resources

Alternative 3 would result in impacts similar to that of the proposed project described in Section 3.5, "Cultural Resources", of this Draft EIR.

Traffic and Circulation

Alternative 3 would result in impacts similar to those of the proposed project described in Section 3.6, "Traffic and Circulation", of this Draft EIR, however, for a reduced number of years. Alternative 3 would reduce the need for reduction in haul trucks traveling through the Healdsburg Avenue/Old Redwood Highway intersection in the AM peak hour, per Table 3.6-8.

Air Quality

Alternative 3 would result in impacts similar to those of the proposed project described in Section 3.7, "Air Quality", of this Draft EIR. This alternative would reduce all of the criteria pollutant emissions over the long-term compared to the proposed project. Because the significance determination of PM_{10} emissions is measured on an annual basis rather than for the duration of the entire project (10 vs. 15 years), potential impacts would remain significant and unavoidable. CO_2 emissions associated with haul truck trips would decrease with a shortened timeframe and, as such, this alternative's contribution to global climate change would be proportionately less than the proposed project.

Aesthetics

Alternative 3 would result in impacts similar to those of the proposed project described in Section 3.8, "Aesthetics", of this Draft EIR, but for 10 years instead of 15.

Noise

Alternative 3 would result in impacts similar to those of the proposed project described in Section 3.9, "Noise", of this Draft EIR. Potential impacts associated with operational and traffic noise would remain significant and unavoidable because significance is measured in daily, hourly, and similar increments rather than for the duration of the entire project.

Public Services and Utilities

Alternative 3 would result in impacts similar to that of the proposed project described in Section 3.10, "Public Services and Utilities", of this Draft EIR.

Hazards and Hazardous Materials

Alternative 3 would result in impacts similar to that of the proposed project described in Section 3.11, "Hazards and Hazardous Materials", of this Draft EIR but for 10 years instead of 15.

Energy

Alternative 3 would result in impacts similar to that of the proposed project described in Section 3.12, Energy, of this Draft EIR.

Land Use

Alternative 3 would result in impacts similar to those of the proposed project identified in Section 3.13, “Land Use”, of this Draft EIR.

Recreation

Alternative 3 would result in impacts similar to that of the proposed project described in Section 3.14, “Recreation”, of this Draft EIR, but for 10 years rather than 15.

Growth Inducement

Similar to the proposed project, Alternative 3 would not result in growth-inducement (see Section 4.1 of this Chapter).

Cumulative Effects

Alternative 3 would contribute the same increment of effects to cumulative impacts as described in Section 4.2 of this Chapter.

Alternative 4 – Proposed Project with a Lower Extraction Volume

Alternative 4 would reduce PM_{10} emissions below the NSCAPCD thresholds. This alternative would be similar to the proposed project, with the exception of the annual amount of aggregate produced each year. Syar would mine aggregate resources along the 6.5-mile Alexander Valley reach of the Russian River in accordance with the methods, standards, and AMS identified under the proposed alternative, including the daily and seasonal timing of mining activities and duration of mining activities (15 years). However, Syar would reduce its production from a cap of 350,000 tons with 300,000 tons per year average to a cap of 132,000 tons of aggregate per year. This reduction would likely result in smaller mined areas in the gravel bars, as well as fewer bars mined. Other proposed mining methods, including minimum buffers at head and side of bars, and a minimum elevation of one-foot elevation above the low flow water level, would be the same as the proposed project. The proposed project based the amount of restoration to be completed within the REP based on the extraction volume. Since the extraction volume is reduced under Alternative 4, the amount of restoration would be reduced to less than half of that in the proposed project.

Geology and Soils

Alternative 4 would result in impacts similar to that of the proposed project described in Section 3.1, “Geology and Soils”, of this Draft EIR.

Geomorphology, Hydrology, and Water Quality

Although this alternative would continue to be guided by the AMS in determining the annual extraction amount, if the extraction volume was capped at a level much lower than the sustainable yield, material would aggrade within deposition areas until a large storm event removes the material naturally. Aggradation of material has the potential to constrict the river channel and reduce flood capacity in depositional areas, and may result in an increased risk of upstream flooding and lateral bank erosion above that of the proposed plan. With the AMS and the supplemental mitigation measures identified in Section 3.2, “Geomorphology, Hydrology and Water Quality”, the potential for bank erosion with the proposed project would be addressed and reduced to less-than-significant levels. Although this alternative would not reduce flooding as much as the proposed alternative, it would still reduce flooding potential over the existing conditions. Because the head and outside bar buffers will remain in both this and the preferred alternative, a difference in erosion is not expected, although with the implementation of the AMS and active monitoring of bank erosion, that potential would be reduced in comparison to the existing conditions.

Vegetation and Wildlife

Alternative 4 would result in impacts similar to those of the proposed project described in Section 3.3, “Vegetation and Wildlife”, of this Draft EIR. Because less material would be taken from the gravel bars, more vegetation may be retained at the head and sides of the bars. In addition, the yearly duration of mining activities may be shorter than that identified for the proposed project, thus increasing the time reclamation could occur. Because the amount of REP activities would be reduced to less than half of that compared the proposed project the ratio of habitat removed or disrupted to that being created by REP activities would be reduced. Thus overall vegetation and wildlife resources would incur a greater impact over the long term.

Fisheries

Under Alternative 4, less material would be extracted, resulting in smaller mined areas. The opportunities for habitat enhancement for fisheries would also be proportionally less because REP activities would be reduced compared to the proposed plan due to the decrease in extraction volume. However, because this alternative would be guided by the AMS similar to the proposed project, the same protection of fisheries habitat including retention of riffle and pools would apply. The application of the AMS and supplemental mitigation measures identified in Section 3.4, “Fisheries Resources”, would ensure that potential impacts to fisheries resources would be less than significant/beneficial for this alternative.

Cultural Resources

Alternative 4 would result in impacts similar to that of the proposed project described in Section 3.5, “Cultural Resources”.

Traffic and Circulation

Under this alternative, the overall extraction amount would be reduced per year. As such, the total number of haul truck trips would also decrease annually compared to the proposed project. On an annual basis, hauling 132,000 tons would require 10,560 one-way truck trips per year when hauling 25 tons per truck. Because traffic circulation is based on hourly estimates, the impacts associated with haul truck traffic would likely remain the same because it is assumed that the mining operation would still achieve the hourly hauling maximums of 20 trucks per hour and mine for fewer days of the season. Mitigation would apply per the proposed project at Healdsburg Avenue/Old Redwood Highway during the AM peak from 7:00–9:00 AM in accordance with Table 3.6-8, or the alternate steps specified in Mitigation Measure 3.6-1a, thus reducing that impact to a less than significant level.

Air Quality

This alternative was defined to reduce the total extraction volume per year to meet the NSCAPCD recommended standard of 15 TPY for PM_{10}. This alternative assumes that all dust control measures would be implemented, including those proposed as part of the project and those included as mitigation identified in Section 3.7, “Air Quality”. With implementation of all dust control measures, emission of dust would not exceed the NSCAPCD standards, and impacts would be reduced to a less-than-significant level.

Aesthetics

Alternative 4 would result in impacts similar to those of the proposed project described in Section 3.8, “Aesthetics”, of this Draft EIR. Because less material would be taken from the gravel bars, the yearly duration of mining activities may be shorter than that identified for the proposed project, resulting in a shorter duration of visual effect during the mining season.

Noise

As discussed above, if the total number of truck trips decreases over an operating season, the number of truck hauling activities would also decrease overall during an operating season. However, because traffic noise impacts is based on maximum day haul truck trips, potential effects associated with traffic noise would be similar to that of the proposed project, and be significant and unavoidable if retrofitting of sensitive receptors were not possible. If the owners of the building agreed to retrofits, then traffic noise would be less than significant. However, because the total number of days of hauling per operating season and through the permit life would reduce, noise impacts to nearby sensitive receptors would decrease. Operational noise would remain significant and unavoidable, even after mitigation, if Bars S-9 and S-10 were to be mined.

Public Services and Utilities

Alternative 4 would result in impacts similar to that of the proposed project described in Section 3.10, Public Services and Utilities.

Hazards and Hazardous Materials

Alternative 4 would result in impacts similar to that of the proposed project described in Section 3.11, “Hazards and Hazardous Materials”.

Energy

Alternative 4 would result in impacts similar to that of the proposed project described in Section 3.12, “Energy”. Because less material would be taken from the gravel bars, the yearly duration of mining activities may be shorter than that identified for the proposed project, resulting in less consumption of energy resources.

Land Use

Alternative 4 would result in impacts similar to those of the proposed project identified in Section 3.13, “Land Use”.

Recreation

Alternative 4 would result in impacts similar to that of the proposed project described in Section 3.14, “Recreation”.

Growth Inducement

Similar to the proposed project, Alternative 4 would not result in growth-inducement (see Section 4.1 of this Chapter).

Cumulative Effects

Alternative 4 would contribute the same increment of effects to cumulative impacts as described in Section 4.2 of this Chapter.

Alternative 5 – Proposed Project Without the Mining of Bars S-9 and S-10 and Use of Haul Route 5

Alternative 5 would eliminate the project's significant unavoidable noise impacts on several receptors near Bars S-9 and S-10, and one receptor on Geyserville Avenue located adjacent to Haul Route 5. As discussed in Section 3.9, "Noise", mining Bars S-9 and S-10 would result in significant unavoidable impacts at several nearby receptors, and haul truck traffic on Haul Route 5 would result in a significant unavoidable impact at one receptor on Geyserville Avenue. Under this alternative, the operator would mine aggregate resources in accordance with the methods, standards, and AMS identified under the proposed alternative, but would not mine Bars S-9 and S-10 and would not use Haul Rote 5. Access to Bars S-7 and S-8 would be routed to more distant haul routes, and Haul Route 5 would not be available as an alternate for several other bars.

This alternative would appear to contradict the applicant's objective and the County's public policy in protecting public infrastructure, because it would preclude mining of the two bars immediately upstream of the Geyserville Bridge, which was closed for more than seven months in 2006 after it was damaged by floodwaters. In addition, in the winter of 2009, further bank erosion occurred upstream of the bridge on the west bank, and Caltrans spent $1.5 million to place additional large rock slope protection to prevent further erosion and protect the bridge. As noted in Chapter 1, Project Description, the operator has proposed to mine Bar S-9 in the first year of mining, and to excavate and enhance the adjacent floodplain terrace to provide high-flow refugia for threatened and endangered fish.

Geology and Soils

This alternative would result in impacts similar to that of the proposed project described in Section 3.1, "Geology and Soils", of this Draft EIR.

Geomorphology, Hydrology, and Water Quality

This alternative would generally result in impacts similar to that of the proposed project described in Section 3.2, "Geomorphology, Hydrology and Water Quality", of this Draft EIR. This alternative would not reduce flooding as much as the proposed alternative, however, and may not avoid flooding impacts on the Geyserville Bridge, which is located immediately downstream of Bars S-9 and S-10. As noted above, the bridge was closed between January and August 2006 after floodwaters undermined one of the bridge's piers and caused noticeable sag. The bridge was immediately closed, and Caltrans fastracked the bridge replacement work, which required a $10 million contract to demolish the old bridge, and an $11.8 million contract to construct the new bridge. In addition, as noted above, further bank erosion occurred in the winter of 2009, and Caltrans spent additional funds to place large rock slope protection to prevent further erosion and protect the bridge.

Vegetation and Wildlife

Alternative 5 would result in impacts similar to those of the proposed project described in Section 3.3, "Vegetation and Wildlife", of this Draft EIR. Because no material would be taken from Bars S-9 and S-10, all existing vegetation would be retained at those bars.

Fisheries

Alternative 5 would result in impacts similar to those of the proposed project described in Section 3.4, "Fisheries Resources", of this Draft EIR.

Cultural Resources

This alternative would result in impacts similar to that of the proposed project described in Section 3.5, "Cultural Resources".

Traffic and Circulation

This alternative would result in impacts similar to that of the proposed project described in Section 3.6, "Traffic and Circulation".

Air Quality

This alternative would result in impacts similar to that of the proposed project described in Section 3.7, "Air Quality". However, Haul Route 5 is the closest route to Bars S-7 and S-8, and is designated as the primary haul route for those bars. Haul Route 5 is also designated as a haul route or alternative access for nine other bars, partly because of its prime location in the middle of the relevant river stretch. The elimination of Haul Route 5 would divert access to other haul routes with greater distances, increasing emissions of PM_{10} and other criteria pollutants.

Aesthetics

Alternative 5 would result in impacts similar to those of the proposed project described in Section 3.8, "Aesthetics", of this Draft EIR. The elimination of Bar S-9 would eliminate views of mining equipment and operations from the Geyserville Bridge.

Noise

As discussed above, this alternative was defined to eliminate the project's significant adverse impacts from mining operations on several receptors near Bars S-9 and S-10, and from haul truck traffic on one receptor on Geyserville Avenue on Haul Route 5.

Public Services and Utilities

Alternative 5 would result in impacts similar to that of the proposed project described in Section 3.10, "Public Services and Utilities".

Hazards and Hazardous Materials

This alternative would result in impacts similar to that of the proposed project described in Section 3.11, "Hazards and Hazardous Materials".

Energy

Alternative 5 would result in impacts similar to that of the proposed project described in Section 3.12, “Energy”.

Land Use

Alternative 5 would result in impacts similar to those of the proposed project identified in Section 3.13, “Land Use”. However, by eliminating mining of Bars S-9 and S-10, this alternative could conflict with ARM Plan policies for the protection of public infrastructure.

Recreation

Alternative 5 would result in impacts similar to that of the proposed project described in Section 3.14, “Recreation”.

Growth Inducement

Similar to the proposed project, Alternative 5 would not result in growth-inducement (see Section 4.1 of this Chapter).

Cumulative Effects

This alternative would contribute the same increment of effects to cumulative impacts as described in Section 4.2 of this Chapter.

COMPARISON OF ALTERNATIVES

Alternative 2, Compliance with the ARM Plan, would result in the highest number of significant and unavoidable impacts. Alternative 3, Mining within a 10-year Time Period, would result in the same number of significant and unavoidable impacts as the proposed project.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Comparing the alternatives listed with the proposed project, the alternative with the least direct environmental impact is Alternative 1 – No Project as it would not require any mining activities that would result in any disturbance to adjacent uses and would result in the least number of significant and unavoidable impacts. However, it would also not meet the project objectives described in Chapter 1.

Section 15126.6(e)(2) of the *CEQA Guidelines* states that if the environmentally superior alternative is the No Project alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Among the other alternatives, Alternative 4. “Proposed Project with a Lower Extraction Volume” is determined to be the environmentally superior alternative. As discussed above, this alternative would reduce significant unavoidable air quality impacts associated with PM_{10} emissions to less-than-significant levels. This alternative would also meet most of the objectives of the proposed project, but would not achieve Syar’s target of aggregate production. This alternative also would reduce the return on Syar’s investment and may make the project economically infeasible.

5.0 PROGRAMMATIC IMPACTS OF THE PROPOSED ARM PLAN AND SMARO AMENDMENTS

5.1 INTRODUCTION

This Draft EIR already discusses the ARM Plan and mining ordinance amendments at considerable length. The amendments are identified and discussed in detail in Section 1.5 of Chapter 1, Project Description. The potential impacts of implementing the amendments are disclosed, analyzed, and mitigated in Section 3.2, "Geomorphology, Hydrology, and Water Quality"; Section 3.3, "Vegetation and Wildlife"; and Section 3.4, "Fisheries Resources". The relevant impacts are also summarized in Chapter 2, "Summary". In addition, the impacts of not adopting the proposed amendments are identified and evaluated in several sections of Chapter 4, including the No Project Alternative (in which neither the amendments nor the proposed mining would be approved) and Alternative 2, which proposes mining in compliance with all existing ARM Plan and mining ordinance standards, and without amending the ARM Plan or SMARO.

This chapter thus provides one additional evaluation of the proposed ARM Plan and mining ordinance amendments. In Section 5.2, this chapter again identifies the amendments as currently proposed, though they are subject to change as part of the public process for this project. In Section 5.3, this chapter again discloses, analyzes, and mitigates the potential impacts of the proposed amendments.

Like the PEIR for the ARM Plan, this chapter necessarily provides a programmatic, first-tier analysis rather than a site-specific evaluation of any potential future project. CEQA and its Guidelines state that a programmatic analysis is appropriate for a proposed approval of "rules, regulations, plans, or other general criteria to govern the conduct of a continuing program." CEQA Guidelines, § 15168, subd. (a)(3). CEQA encourages agencies to prepare a programmatic analysis "for a large-scale planning approval, such as a general plan or component thereof (e.g., an area plan or community plan)," and to defer the development of detailed, site-specific information until such time as the agency receives an application and prepares a future environmental document for a project with a specific site. CEQA Guidelines, § 15152, subds. (b) and (c).

The proposed amendments consist entirely of "rules, regulations, plans, [and] other general criteria to govern the conduct of a continuing program." The proposed amendments would govern mining in Sonoma County and the Lower Alexander Valley Reach of the Russian River. They would not approve any potential future mining project, nor compel any future County decisionmaker to ever doing the same. A future mining project would instead require a separate application and a separate, site-specific environmental review document, and would be subject to the unfettered discretion of the relevant decisionmakers. The decisionmakers would be free to either deny future projects, and/or impose conditions on them limiting their extent, reach, methods, or environmental impacts.

As a result, this chapter provides a programmatic analysis of the potential environmental impacts of revising the ARM Plan and SMARO as set forth below. Any future permit renewal or other mining project would be required to obtain a use permit from the County and would be assessed in a CEQA document that discloses, analyzes, and mitigates any site- and project-specific environmental impacts. This chapter and DEIR also identify measures to mitigate potentially significant environmental impacts, and provides that these measures shall be incorporated into the ARM Plan or mining ordinance as appropriate.

5.2 DESCRIPTION OF ARM PLAN AND SMARO AMENDMENTS

The proposed ARM Plan and SMARO amendments were developed by staff in consultation with the County's Scientific Review Consultants and the resource agencies, and have been further revised through the development of mitigation measures in this EIR. The proposed amendments incorporate new goals and objectives for the protection of aquatic and other resources, and establish a process for permitting future exceptions to mining standards based upon an assessment of enhancement opportunities and implementation of an enhancement program. The proposed amendments would require mining plans that depart from the ARM Plan standards to provide a reclamation plan that incorporates a river enhancement plan. Enhancement plans would enable a more coordinated interagency permitting process and collaboration with property owners and other community groups to achieve a broader management strategy for the river system.

As discussed in Chapter 1, "Introduction and Project Description", the proposed amendments would modify specific objectives, standards, and requirements of the existing ARM Plan and mining ordinance related to instream mining. The amendments would revise existing ARM Plan Sections 7.2, "Goals and Objectives" and 7.5, "Instream Management Program." Some amendments would apply to instream mining projects proposed anywhere within Sonoma County, while others would apply only to projects in the Lower Alexander Valley Reach of the Russian River. Other rivers and reaches would not be governed by the latter category of proposed amendments.

A. Countywide Amendments.

The following amendments would apply to all future instream mining projects in the County. They would clarify existing language and expand the major objectives of the instream management program to include protection of aquatic habitat and public infrastructure and allow for an adaptive management strategy to achieve broader objectives for river management. These changes include:

- adding an objective to "maintain or enhance the aquatic and terrestrial habitat" associated with instream operations to Section 7.5.2, "Operating Standards,"
- adding an operating standard for the "protection of public infrastructure" to Section 7.5, "Instream Management Program," and
- providing a suggested procedure for the reclamation of mined gravel bars to Section 7.5.3, "Reclamation":

> "Reclamation plans and enhancement programs may include removal of invasive species and establishment of riparian vegetation to strengthen banks and offset potential for lateral bank erosion within the mining reach."

These proposed amendments are consistent with the language and intent of the current ARM Plan and mining ordinance, but were not specifically incorporated in the objectives sections. Adding these objectives would lead to a more integrated system of river management, and thus result in a beneficial environmental impact over the long-term.

The proposed amendments would also modify the ARM Plan and mining ordinance to allow consideration of future exceptions to existing mining standards for projects that include an assessment of enhancement opportunities, implementation of an enhancement program, and a site-specific environmental analysis with expanded study requirements. The proposed amendments would specifically require future mining plans that seek to depart from the ARM Plan standards to provide a detailed, site-specific analysis demonstrating how the project would restore or enhance terrestrial and aquatic habitat and minimize potential for bank erosion. In addition, applicants would be required to propose a reclamation plan that includes measures to enhance and restore riparian habitat, stabilize banks, minimize erosion, and improve aquatic habitat.

The amendments would specifically revise the ARM Plan and/or SMARO to state:

> "Exceptions to the [ARM Plan] mining standards may only be considered in conjunction with a use permit and reclamation plan that incorporates an enhancement program and site-specific objectives and performance criteria. Revised mining standards may be approved only where it has been demonstrated through site-specific analysis and environmental review that the proposed mining method would enhance or restore terrestrial and aquatic habitat, particularly riparian habitat, and minimize potential for bank erosion. Adaptive management of instream mining methods shall be subject to annual review and approval by PRMD staff, in consultation with the County's Scientific Review Consultants and resource agencies to determine compliance with adopted objectives and performance criteria and any modifications to the mining plan, monitoring requirements, or mitigation measures that are required by the County to meet the objectives."

Use permit applicants proposing to remove gravel from the upstream half of a gravel bar are currently required to submit a study prepared by qualified, County-approved experts demonstrating that the proposed mining methods and best management practices are the best approach for reducing impacts to adjacent stream banks. The ARM Plan lists the minimum information that is required for this study. The proposed amendments would require additional information for any proposed exceptions to the ARM Plan standards. Future studies would be required to:

- assess bank stability, and terrestrial and aquatic habitat, particularly riparian habitat;
- identify additional land uses and existing infrastructure such as wells, bridges, roads, levees, or other infrastructure;
- identify opportunities to:
  - strengthen banks with riparian vegetation and/or bioengineered technical bank stabilization measures,
  - enhance a diversity of terrestrial and aquatic habitat, and
  - enhance aquatic habitat;
- make recommendations for setbacks, buffers, or other management practices that would improve bank stability and enhance terrestrial and aquatic habitat;
- provide a comparative analysis of the level of environmental mitigation and benefits which would be achieved by alternate performance standards;
- include an analysis of cumulative impacts arising from the instream mining alternative standards, if data are already available; and

- prepare a reclamation plan incorporating an enhancement program that includes measures to enhance or restore riparian habitat, stabilize banks, minimize potential for bank erosion and improve aquatic habitat.

B. Amendments Specific to the Lower Alexander Valley Reach of the Russian River.

Projects in the Lower Alexander Valley Reach of the Russian River are subject to existing Countywide and Russian River-specific ARM Plan and mining ordinance goals, objectives, and mining standards. The proposed amendments would incorporate new site-specific objectives and performance criteria for the Lower Alexander Valley Reach, as discussed in Section 3.0 "Environmental Impact Analysis" and summarized below. These proposed amendments would apply only to projects proposed in the Lower Alexander Valley Reach. These proposed amendments would add the following objectives for instream mining in the Lower Alexander Valley Reach:

- Reduce the potential for bank erosion in a manner that maintains or enhances riparian vegetation and habitat conditions for fish and wildlife.
- Avoid activities in the stream flow or below water level unless shown to be necessary to improve aquatic habitat conditions.
- Maintain and enhance opportunities for terrestrial wildlife movement.
- Maintain and enhance diverse riparian vegetation as necessary to protect beneficial uses. Strengthen banks along the mining reach with substantial riparian vegetation and/or bioengineered technical measures to improve bank stability and minimize bank erosion.
- Avoid disturbance of existing mature riparian vegetation. Where disturbance of riparian vegetation is shown to be necessary for mining operations and/or reclamation, replace/replant vegetation that provides equal or better habitat than existed prior to mining. Onsite replacement is preferable to offsite replacement.
- Manage extraction to minimize disturbance to physical processes that provide for pool and riffle habitat and maintain a confined channel with complex margins along the riparian zone. Retain, to the extent possible, the topographic attributes of gravel bars including robust bar heads, and bar margins strong enough to withstand the effective discharge stage flows.
- Manage extraction to maintain the minimum baseline reference elevation of the bars established at 1 foot above the summer low flow water level prior to the first year of mining in the reach. Limit annual extraction to the recharge that occurs above the established baseline elevations.
- Limit extraction to the area downstream of the apex or widest point on the bar. Permit exceptions to allow mining up to two-thirds of the bar only where the head of bar buffer is at least 8 feet above the water surface elevation or as determined necessary to protect public infrastructure, but in no case shall mining occur on the upstream one-third of the bar length.
- Monitor thalweg elevations annually at each riffle crest and pool within the mining reach and upstream and downstream of the mining area.
- Manage extraction to assure that:
  - average thalweg elevations measured at riffle crests throughout the mining reach do not drop more than 0.5 feet below pre-mining elevations,

  - o thalweg elevations measured at riffle crests downstream of each mined gravel bar do not drop more than one-foot below pre-mining elevations, and
  - o residual pool depths are maintained or increased.
- Utilize an adaptive management strategy (AMS) in consultation with the County's Scientific Review Consultants and resource agencies. Conduct annual review and approval of instream mining plans prior to mining activities in order to assure that mining activities meet all applicable objectives and standards as well as permit and reclamation conditions.

5.3 POTENTIAL PROGRAMMATIC IMPACTS

As noted above, this DEIR already evaluates the potential environmental impacts of the proposed ARM Plan and mining ordinance amendments identified above in several chapters and sections, including Section 3.2, "Geomorphology, Hydrology, and Water Quality"; Section 3.3, "Vegetation and Wildlife"; and Section 3.4, "Fisheries Resources". As discussed therein, the proposed amendments are intended to improve the mining standards to preserve and enhance geomorphic processes and protect aquatic habitat. Impacts could nevertheless result from the changes to operating standards for instream mining projects, as well as from adaptive management and enhancement plans. The ARM Plan has previously been amended to allow revised mining standards in both Austin Creek and Gualala River.

As noted above, the proposed amendments would require:

- preparation of significant new site-specific environmental studies;
- implementation of enhancement plans (goals, actions, performance standards); and
- implementation of an adaptive management strategy.

As discussed throughout this EIR, and again below, implementation of the proposed amendments would result in several beneficial impacts to the natural environment.

The proposed objectives would better protect and enhance hydrologic values and wildlife habitat by promoting the maintenance and enhancement of aquatic habitat, the maintenance of riffle and pool attributes and a channel with complex margins, the protection of public infrastructure, the maintenance of channel flood capacity, the protection of riparian vegetation and removal of invasive species, and the reduction of bank erosion and its resulting sedimentation.

The proposed amendments also would compel applicants to submit substantial new and detailed information as part of any future request to deviate from current mining standards. The amendments would require applicants to submit, among other items, an assessment of bank stability and riparian habitat; an analysis of cumulative impacts; an explanation of how the proposed project would enhance or restore terrestrial and aquatic habitat and minimize the potential for bank erosion; and a reclamation plan and enhancement program that includes measures to enhance or restore habitat and existing banks. These new requirements would assist in understanding the environmental impacts of potential future projects, developing enhancement and restoration programs, and ensuring that future applications would provide environmental benefits by enhancing or restoring terrestrial and aquatic habitat and minimizing bank erosion. These amendments would thus result in beneficial environmental impacts over the existing ARM Plan and mining ordinance.

The proposed amendments would also directly protect aquatic and terrestrial habitat by requiring compliance with performance standards and adaptive management strategies. Future projects would be required to retain the topographic attributes of gravel bars, avoid extraction below a baseline reference elevation, and manage extraction to preserve the thalweg elevation, residual pool depths, and pool and riffle habitat. The amendments also call for adaptive management and yearly reviews to ensure that all applicable objectives and standards are met, and enhancement programs to enhance or restore riparian habitat, stabilize banks, minimize the potential for bank erosion, and improve aquatic habitat.

Thus, implementation of these amendments would result in significant, long-term, and Countywide beneficial impacts to hydrology and water quality, vegetation, wildlife, other aquatic resources, and fish species and habitat.

Nevertheless, potential future mining projects and their accompanying enhancement and restoration components may use heavy equipment to construct or enhance aquatic and terrestrial habitats, and may thus result in various short-term and some longer-term impacts. These impacts are described in the following subsections, along with measures to mitigate them (where necessary), and the beneficial impacts of the proposed amendments.

A. Geology Minerals and Soils

The 1994 ARM Plan PEIR explained that instream mining can result in channel lowering and incision and increased bank erosion, but mitigated these potential impacts through the mining standards, including the prohibition of mining in the upper half of a bar or below the 2% cross-slope. These standards have proven effective at limiting channel lowering, incision and bank erosion. The proposed amendments would allow revisions to these mitigation measures for projects that propose an exception to existing standards. The expanded monitoring program and adaptive management strategy would mitigate any resulting impacts, however, by limiting mining in specified areas, changing the mining methods, or suspending mining altogether.

The proposed amendments do not mention, implicate, or require construction of any structures, which are not normally involved in instream mining in any case. As a result, the proposed amendments would not result in any impacts to life or property from expansive soils, ground ruptures, ground shaking, liquefaction, or landsliding.

Habitat enhancement plans and activities, such as the construction of oxbows or alcoves, could result in soil erosion or loss of topsoil, as well as slope stability impacts. These potential impacts would be mitigated to a less than significant level by the best management practices and mitigation measures identified in the Section 3.2, “Geomorphology, Hydrology, and Water Quality”.

B. Geomorphology, Hydrology, and Water Quality

As discussed in Section 3.2, “Geomorphology, Hydrology, and Water Quality”, Section 8.3, “Hydrology” of the 1994 ARM Plan Program EIR (Sonoma County, 1994) evaluated potential impacts that could result from bar skimming in the absence of standards and regulations. The PEIR determined that instream mining operations could lower the channel thalweg elevation, resulting in incision, over-steepening of streambanks and increased bank erosion that would affect channel stability and potentially impact water quality by increasing fine sediment loads in the Russian River and its tributaries. The ARM Plan also recognized the possibility of secondary impacts related to channel incision and bank erosion, including loss of streamside agricultural soils, increased sedimentation, and loss of riparian and fishery habitat. Instream operations could also alter the natural geomorphic characteristics of the channel, creating a wide, shallow low flow channel with elevated water temperatures, reduction in pools and riffles, and generally simplifying channel complexity needed for fish habitat.

The PEIR recommended mitigation measures that the County thereafter adopted as operating standards (Section 7.5.2) and restrictions in the management plan. These measures included limiting extraction to more closely match the amount of recharge by implementing a minimum baseline elevation below which mining cannot occur, limiting mining to the lower half of the bar, establishing buffers around the bar perimeter and other operating standards, and requiring participation in the Russian River Gravel Mitigation Program and installation of erosion control. Monitoring data collected since adoption of the ARM Plan indicate that these measures have been effective at preventing channel incision and limiting bank erosion, but may not have been as effective at maintaining aquatic habitat.

The proposed amendments are evaluated at length in section 3.2, “Geomorphology, Hydrology, and Water Quality”. As discussed therein, the proposed amendments would result in significant beneficial impacts. The proposed goals, objectives, and standards would better protect and enhance hydrologic values and water quality by ensuring the enhancement or creation of aquatic habitat, the maintenance of riffle and pool attributes and a channel with complex margins, the protection of infrastructure, the maintenance of channel flood capacity, and the reduction of bank erosion through the AMS.

Section 3.2, “Geomorphology, Hydrology, and Water Quality” also discloses that the proposed amendments could result in adverse impacts. The section evaluates the extent to which revising the method for establishing baseline elevations could result in lowering of the channel. It analyzes the possible hydrologic impacts of revised head-of-bar, side-bar, and outer bank buffers, and potential impacts on groundwater levels as a result of mining’s potential to lower the channel bed.

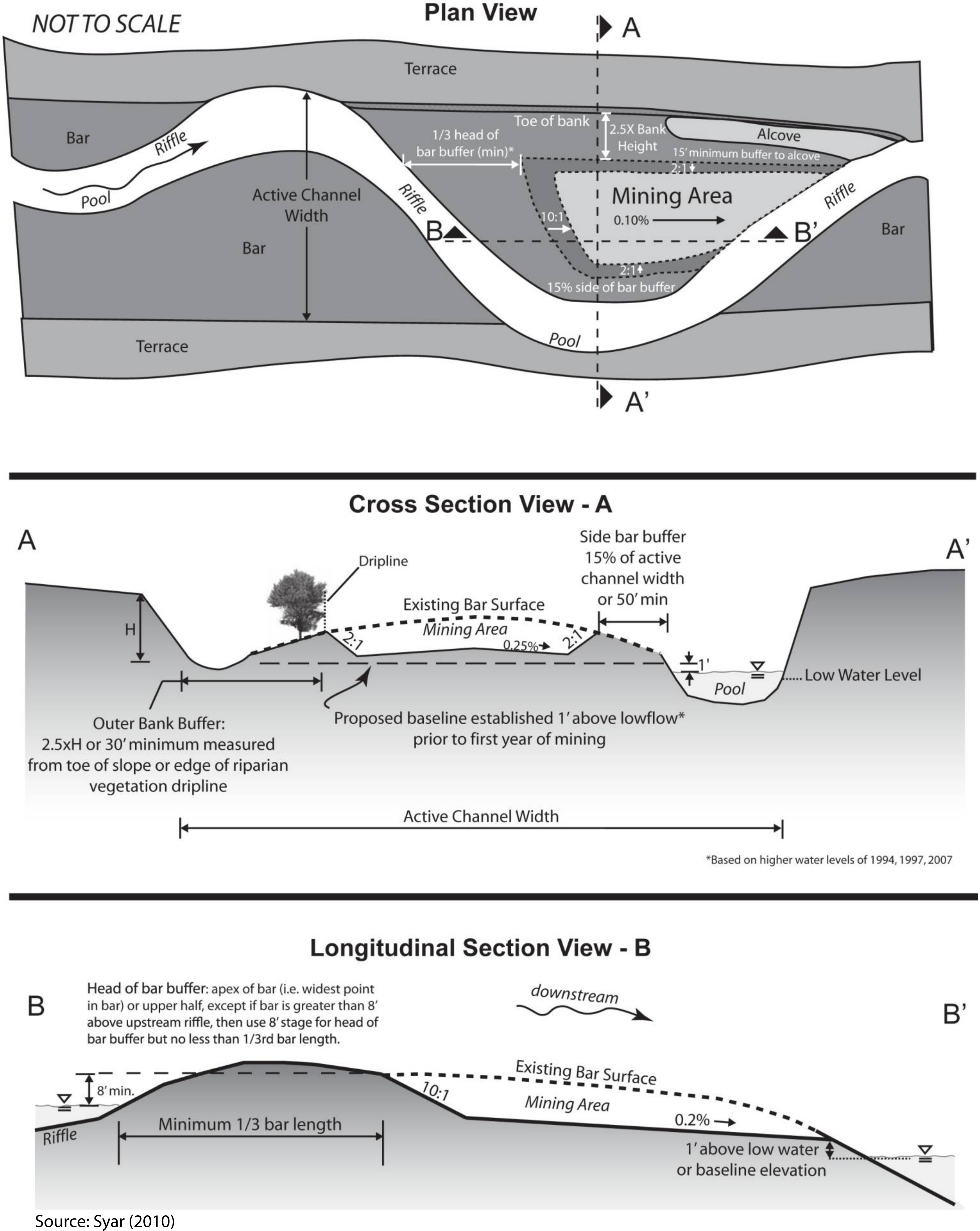
Section 3.2, “Geomorphology, Hydrology, and Water Quality” further identifies mitigation measures to reduce all potential hydrologic impacts to a less than significant level. Those measures would be incorporated into the ARM Plan and mining ordinance, are illustrated in Figure 5-1, and are further described as follows:

- Change the baseline below which mining cannot occur from a 2% cross-slope from the low flow water surface elevation to a level slope (0% slope) established one-foot above the highest low-flow water surface elevation data from 1997 or 2007 as shown in Figure 3.2-9.
- Retain the current ARM Plan standards to allow mining only downstream of the apex or widest point on the bar. Allow mining up to two-thirds of the bar length only when the head of bar buffer elevation is at least 8 feet above the water surface elevation measured from the upstream riffle crest at approximately 200 cfs flow. Mining would only be allowed in the upper half of a bar with a head of bar buffer less than 8 feet above the water surface elevation if necessary to protect public infrastructure. Require that cut slopes be maintained at 10:1 from the bar head to the skim floor surface and sloped to drain to the downstream outlet at the bar tail.
- Expand the required side bar buffer from a minimum of 15 feet to 15% of the active channel (defined as the widest point of the bar and low flow channel) but not less than 50 feet. Limit side bar buffer heights to those of the head of bar buffer, tapering them in width at the downstream end to allow drainage. Require an undisturbed outer bank

buffer of either 2.5 times the height of the bank or 30 feet, whichever is greater, that protects the dripline of existing riparian vegetation towards the low flow channel.

- Impose substantial new monitoring and data collection requirements up and downstream of the mining reach. Require new and improved data regarding sediment storage, channel vertical stability, bar surface areas, low-flow channel width, and pool depths.
- Require compliance with substantial new performance standards (defined in Mitigation Measure 3.2-5) for sediment storage, channel vertical stability, bar surface areas, low-flow channel width, and pool depths.
- Require development and approval of a river enhancement plan and compliance with restoration standards, monitoring requirements, and performance criteria for any requested waiver of the Russian River Gravel Mitigation Fee.
- Impose adaptive management strategies to require future projects to suspend mining, provide additional studies, implement modified mining methods or limitations on the location of future mining activities, and/or construct additional enhancements or other remediation measures if performance standards are not met.

Implementation of the proposed amendments would reduce potential impacts to a less-than-significant level, while providing substantial beneficial impacts on geomorphology, hydrology, and water quality.



Source: Syar (2010)
Note: please see Figure 1-6 for cross sections

Figure 5-1
Proposed Change to ARM Plan Standards with Mitigation for Lower Alexander Valley Reach

C. Vegetation and Wildlife

The ARM Plan PEIR (Sonoma County 1994) evaluated potential vegetation and wildlife impacts in Section 8.6, “Vegetation and Wildlife”. The PEIR determined that instream operations would create short-term habitat losses during mining, and long-term losses if the same zones are continually mined. The PEIR mitigated short- and long-term impacts by requiring implementation of mining standards, off-site mitigation measures, standard mitigation and reclamation plan requirements, and contribution towards the Russian River Gravel Mitigation Fund Stream Restoration Program. These measures were incorporated into the ARM Plan policies and SMARO. The PEIR determined that these mitigation measures would reduce instream mining impacts on vegetation and wildlife resources to less-than-significant levels.

The proposed amendments are discussed and analyzed at great length in Section 3.3, “Vegetation and Wildlife”, of this EIR. Section 3.3 notes that impacts could result from the revised outer bank setback, the waiver of mitigation fees based on an enhancement plan, and revised mining methods and enhancement activities that could affect protected species.

Section 3.3, “Vegetation and Wildlife” then imposes mitigation measures to reduce those potential impacts, including:

- Revising the ARM Plan and mining ordinance to require the outer bank setback be measured from the toe of the outer bank slope and include the dripline of any existing riparian vegetation (Mitigation Measure 3.3-1). This measure would be incorporated into the mining ordinance at Section 26A-09-020(e)(3)(iii), “Setbacks”.
- Imposing restoration standards, monitoring requirements and performance criteria for riparian restoration activities, as specified in Mitigation Measure 3.3-2.
- Requiring surveys for and protection of special status and protected species and other vegetation and wildlife (Mitigation Measure 3.3-3).

Section 3.3, “Vegetation and Wildlife” explains that, with mitigation, the proposed amendments would result in a beneficial impact on vegetation and wildlife resources by increasing the area, extent, and performance of proposed riparian restoration activities. Section 3.3 further explains that the remaining, adverse impacts of the proposed amendments would be less than significant with implementation of the measures and mining standards identified above.

D. Fisheries Resources

The 1994 ARM Plan (Sonoma County, 1994) identified potential impacts to fisheries related to bank erosion, increased water temperatures, increased sedimentation, loss of cover, loss of spawning habitat, a reduction of food supply, an increased potential for stranding of juvenile fish and interference with migratory patterns. The ARM Plan established standards to address impacts to fisheries resources including: no mining below water; limitations on the mining season; required buffers that limit the area of mining and establishment of standards for stream crossings; sedimentation and erosion controls; and contribution to the Russian River Gravel Mitigation Fund.

Section 3.4, “Fisheries Resources” explains that the proposed amendments include new goals, objectives, and standards that would protect and enhance fisheries resources. The amendments include revised objectives to protect aquatic habitat and include revised performance standards to maintain the bar form and geomorphic processes that provide aquatic habitat. The amendments also call for adaptive management of the instream mining methods within the Russian River and require an enhancement program when revised mining standards are proposed. These amendments are intended to protect fisheries resources and would be beneficial.

Section 3.4, “Fisheries Resources” also discusses the potential adverse impacts of these amendments at length. Section 3.4 discloses and evaluates the potential impacts that could result from allowing revisions to mining standards, including impacts on pool and riffle habitat; possible fish stranding impacts; erosion and other impacts of revised bar buffers and implementation of the AMS, and the effects of allowing a waiver of impact fees based on a river enhancement plan. This EIR imposes significant mitigation measures, in Sections 3.2, “Geomorphology, Hydrology, and Water Quality”; 3.3, “Vegetation and Wildlife”; and 3.4, “Fisheries Resources and others, that would reduce all such adverse impacts to a less-than-significant level, while preserving the beneficial impacts of the proposed amendments.

E. Cultural Resources

The ARM Plan PEIR identified potential impacts to cultural resources (including archeological, paleontological and historic resources) as a result of ground clearing, aggregate removal or associated processing, transportation activities and reclamation activities. The ARM Plan and mining ordinance includes mitigation measures requiring consultation with tribal authorities, literature search, pre-mining field surveys, cultural resource orientation of mining operators, halting work if resources are encountered, and recovery measures as defined in SMARO Section 26A-09-010(p). The proposed amendments would not change these requirements, although they should be updated to reflect current tribal contact information.

In accordance with SB 18, the County initiated consultation with tribal authorities for the proposed amendments to the ARM Plan and mining ordinance. No comments were received during the Notice of Preparation or as the date of publication of the Draft EIR.

The proposed amendments do not mention or directly address cultural resources issues. The proposed amendments do allow for river enhancement plans, however, and such plans may include the construction or enhancement of aquatic and terrestrial habitats. Indirect impacts could occur if such construction exposed or disturbed cultural artifacts or remains. The ARM Plan and SMARO already contain mitigation measures that reduce all such impacts to a less-than-significant level, however, and the proposed amendments would not change them.

In addition, any effects on cultural resources from a potential future project would be disclosed, analyzed, and mitigated as part of the CEQA review for that specific approval. As a result, approval of the proposed amendments would not result in any significant adverse impacts related to cultural resources.

F. Traffic and Circulation

The ARM Plan PEIR identified significant operational and safety impacts from gravel truck traffic on County roads. The ARM Plan established the Aggregate Road Mitigation Fund to partially mitigate the impacts of excessive road wear, and required that all roads used for site access have sufficient width, shoulders and pavement strength or other features necessary to adequately mitigate the traffic impacts of proposed operations.

The proposed amendments do not alter these requirements. They would only implicate traffic indirectly, and only to the extent potential future enhancement plan activities could involve construction that would result in increased road use by construction equipment and other vehicles. Any such road use would be temporary, and limited to the extent necessary to implement enhancement plan activities.

Section 26A-09-010(c) of the mining ordinance already requires the following measures, which would be incorporated into project conditions to reduce the level of the above impacts to less-than-significant:

- All private roads or driveways providing access to a mining site shall be adequately managed to prevent aggregate or other materials being drawn onto the public roads and rights-of-ways;
- Payment of annual traffic mitigation fee for cumulative operational impacts;
- Upgrade of driveways and access routes with approval of encroachment permits;
- Traffic warning signs, bicycle lanes, acceleration-deceleration lanes, turning lanes or other traffic management facilities shall be placed by the operator at appropriate locations as determined by the County;
- Upgrading of haul routes to a standard capable of accommodating the additional weight of trucks and minimizing traffic hazards;
- Payment of annual aggregate road mitigation fee for excessive wear and tear impacts to County roads;
- Development and implementation of a truck driver education program including details on preferred haul routes and procedures to reduce conflicts and respond to complaints about gravel trucks; and
- All roads used for site access should have sufficient width, shoulders, pavement strength and other features necessary to adequately mitigate the traffic impacts. Public access roads shall meet the design requirements of the General Plan and related standards and traffic levels on public access roads shall not exceed the acceptable levels identified in the General Plan.

These measures would reduce any potential future impacts to a less-than-significant level. In addition, any future mining and enhancement proposals or permit renewals would be subject to a project-specific CEQA and public review to further reduce or avoid potential impacts.

G. Air Quality

The ARM Plan PEIR identified impacts to air quality from on-site vehicular and equipment emissions and suspended particulate and dust emissions from aggregate operations. Mitigation measures incorporated into the ARM Plan include:

- Watering exposed soils twice daily with complete site coverage and increasing frequency when wind speeds exceed 15 mph;
- Road sweeping of mud and dust carried onto street surfaces;
- Spraying of haul routes and drop piles;
- Covering haul trucks; and
- Post mining revegetation or soil stabilization.

The proposed amendments would not change these requirements. They would only implicate air quality issues indirectly, to the extent future enhancement plans may include the construction or enhancement of aquatic and terrestrial habitats that would require construction equipment, new vehicle trips, or other emissions.

Any such impacts would be temporary, and limited to emissions necessary to implement enhancement activities. The ARM Plan and mining ordinance, Section 26A-09-010(o)(2), already include substantial measures to reduce them to less than significant. These measures include:

- Water all active construction areas and haul routes at least twice daily and more often during windy periods (i.e., 15 mph). Active areas adjacent to residences shall be kept damp at all times. Pave and apply water at least twice daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas. Enclose, cover, and water twice daily, or apply (nontoxic) soil binders to exposed stockpiles. Install wheel washers for all existing trucks, or washing off the tires or tracks of all trucks and equipment leaving the site.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- Cover all hauling trucks or maintain at least 2 feet of freeboard.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas and sweep streets daily (with water sweepers) wherever visible soil material is deposited onto the adjacent roads.
- Hydroseed or apply (nontoxic) soil stabilizers to inactive mining areas and haul routes (previously graded areas that are inactive for 10 days or more).

In addition, potential future projects would be subject to site-specific environmental review. Such CEQA review would evaluate project consistency against then-applicable thresholds and standards for criteria pollutants, CO_2e emissions, and other air quality concerns identified by CEQA. Mitigation measures would be required to the extent necessary to bring potential future projects into compliance with the relevant significance thresholds, which change over time. As discussed above, the proposed amendments do not approve any future project, and only implicate air quality concerns to the extent that implementation future enhancement plans may generate additional emissions. Such emissions would be limited, temporary, and mitigated by measures identified in the ARM Plan, mining ordinance, and project-specific environmental review.

H. Aesthetics

The ARM Plan PEIR and mining ordinance impose mitigation measures and require adherence to standards to reduce the potential impacts of mining operations on visual resources. These measures include requiring buffering, berming, and visual screening between operations and adjacent public streets or public uses, and requiring special provisions for screening for operations in designated scenic areas or within 300 feet of General Plan-designated scenic corridors.

The proposed amendments do not change these requirements or otherwise directly impact visual resources. The proposed amendments would only implicate aesthetic concerns if future enhancement plans including construction or enhancement of aquatic and terrestrial habitats that would be visible from public or scenic viewpoints. Such construction or enhancement activity could result in short-term impacts related to views of construction equipment, removal of invasive vegetation, or relocation of native, riparian vegetation. Such impacts would be temporary, and limited to the work necessary to implement enhancement measures.

The proposed amendments would result in beneficial long-term impacts by promoting the enhancement of the natural habitat for vegetation and wildlife, and thus complementing the scenic views of enhanced areas. The planting of new, native vegetation communities and development of alcoves, oxbows, or other enhancement features would result in increased scenic and other aesthetic values along the Russian River and near other mining sites.

I. Noise

The ARM Plan PEIR identified potentially significant and unavoidable noise impacts related to the volume of truck traffic traveling to and from the mining sites. Mitigation Measures identified in the ARM Plan include:

- construction of sound barriers or installation of landscape noise buffers, berms and / or stockpiles could be used to shield the nearest noise-sensitive receptors;
- insulation of affected residential units and other design techniques;
- limitation on the hours of operation for haul trucks to daytime hours only;
- limit on the number of trucks per hour; and
- restriction on the use of air brakes.

The ARM Plan PEIR (Sonoma County 1994) found that these measures would reduce noise impacts, but would not fully mitigate cumulative noise from haul trucks on public roadways. The Board of Supervisors therefore adopted a statement of overriding considerations for noise impacts from haul trucks related to implementation of the ARM Plan and associated mining ordinance.

The proposed amendments do not specifically address noise impacts or change existing requirements in the ARM Plan or mining ordinance. Noise issues would be indirectly implicated only through the implementation of potential future enhancement plans that require the use of construction equipment or other noise-generating activities.

Such impacts would be temporary and limited to the equipment and activities necessary to implement the proposed enhancement. The impacts would be reduced through implementation of the above-identified ARM Plan mitigation, as well as additional measures identified through the CEQA process for the specific project and enhancement plan.

J. Public Services and Utilities

The ARM Plan PEIR (Sonoma County 1994) identified degradation of local roadways from increased truck traffic as a potentially significant impact to public services and utilities, and established a Road Mitigation Fund to address maintenance and repairs from heavy truck traffic. The proposed amendments do not change these requirements. However, as discussed in Section 5.2.F, implementation of the proposed amendments could result in increased traffic related to the potential future enhancement activities. Mitigation measures already included in the mining ordinance would reduce such impacts on public roadways to a less than significant level. In addition, potential future proposed projects (and any future enhancement proposals) also would be subject to site-specific CEQA review and further mitigation.

K. Hazards and Hazardous Materials

The ARM Plan PEIR (Sonoma County 1994) identified potential impacts related to storage and use of hazardous materials at mining sites and required development and implementation of spill prevention plans to reduce such impacts to less-than-significant. The proposed amendments would not change these requirements or directly implicate hazard concerns. Enhancement activities implement pursuant to the proposed amendments could involve construction equipment that have the potential to release hazardous substances, but compliance with the ARM Plan and mining ordinance, including the required development and implementation of spill prevention and recovery plans, would reduce such impacts to a less than significant level. In addition, potential future mining plans and enhancement proposals would be subject to a site-specific CEQA and further mitigation.

L. Energy

The ARM Plan PEIR (Sonoma County 1994) did not identify any impacts to energy resources related to instream mining. The proposed amendments do not implicate energy resources, and would not result in any significant impacts. Projects would not generally generate demand for energy services that would result in the need for new or physically altered facilities or exceed the ability of the service provider to provide service without substantially decreasing its ability to serve the existing population. Energy consumption related to vehicle and equipment use would increase, however the ARM Plan identified local production of aggregates as a means of meeting projected demand while minimizing the energy required for production. The impact of the proposed amendments would not result in any significant impacts on energy use.

M. Land Use

The proposed amendments would not result in impacts on land use. The amendments would not divide a community, or displace people or buildings used for housing. There are no adopted habitat conservation plan or natural community conservation plans that would be implicated by the proposed amendments, and potential future enhancement activities would not conflict with agricultural operations and are considered compatible uses under the County's Rules for Administering Williamson Act contracts.

N. Recreation

The ARM Plan PEIR (Sonoma County 1994) identified that instream mining could result in adverse impacts to recreation, including reduced stream access; unaesthetic conditions, noise, and dust; disruption of wildlife habitat; and potential conflicts with recreational users on public roads used as gravel haul routes. The PEIR also identified a significant cumulative reduction in the quality of the river recreation experience. Mitigation measures incorporated into the ARM Plan and mining ordinance reduce all such impacts to less than significant by limiting instream mining activities to weekdays only, and requiring operators to contribute a fair-share to the Russian River Gravel Mitigation Fund as set forth in the Board of Supervisor's resolution 95-0450 or as later amended.

The proposed amendments do not mention, directly address, or change these requirements. They would only implicate recreational resources to the extent that possible future enhancement plan that include the construction of habitat enhancement features that are unsightly, generate noise, or temporarily block access to a recreation area. Such impacts would be temporary and limited to the implementation of enhancement activities, and would be substantially reduced by the existing requirements limiting mining to weekdays and a limited mining season (June 1 to

November 1), when the bulk of recreation use typically occurs on weekends. Implementation of the proposed amendments would thus result in temporary and less than significant on recreation.

Moreover, tong-term impacts of enhancement activities would be entirely beneficial. In accordance with ARM Plan goals and objectives, enhancement projects would increase the natural habitat for vegetation and wildlife and provide more opportunities for recreation.

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7.0 PERSONS CONTACTED

7.1 HYDROLOGY AND WATER QUALITY

Cluer, Brian, Ph. D. Hydrologist and Geomorphologist, NOAA, NMFS. March, 2010 – Communications regarding effect of encroachment, resulting in narrowing of the Russian River Alexander Valley meander belt.

Seppeler, Chris. Senior Environmental Specialist. Sonoma County Permit and Resource Management Department. December 8, 2009 - Email communication regarding instream gravel mining history of the Russian River Alexander Valley and Middle Reaches.

7.2 VEGETATION AND WILDLIFE

Cook. David. Senior Environmental Wildlife Specialist. Sonoma County Water Agency. December 8, 2009 – Email communication regarding basking and nesting behavior of pond turtles in the Russian River.

Cox, Bill. Program Manager. California Department of Fish and Game. August 23, 2007 - Conversation with Sean Avent regarding California freshwater shrimp and where (which habitats) they were found in the Russian River.

Dericco, Rand. Project Personnel. Syar Industries, Inc. May 7, 2007 - Conversation during biological reconnaissance site visit with Sean Avent and Lynn Hermanson regarding bald eagle occurrences during winter 2006/2007 within project reach of Russian River.

Peltz, Laura. Project Manager. Sonoma County PRMD. August 2007 – Written confirmation of bald eagle sighting during March 2007 within the study area.

Sachin, Alex. Staff. North Sonoma County Air Pollution Control District. August 2007 – phone communication regarding the Health Risk Assessment methodology.

7.3 TRAFFIC

Peltz, Laura. Project Manager, Sonoma County PRMD. September 25, 2009 - Conversation with Dave Anderson, North Coast Railroad Authority, regarding freight service timelines on the SMART line.

Perry, John. Project Personnel. Syar Industries, Inc. October 23, 2009 – Conversation with Sean Avent, EDAW AECOM, regarding access to River Enhancement Plan sites.

7.4 NOISE

Peltz, Laura. Project Manager, Sonoma County PRMD. September 25, 2009 - Conversation with Dave Anderson, North Coast Railroad Authority, regarding freight service timelines on the SMART line.

7.5 RECREATION

Mercer, Lolly. Staff. River's Edge Kayak & Canoe Trips. October 17, 2007 – Conversation with Anne Ferguson regarding kayaking on the Asti run of the Russian River.

8.0 REPORT PREPARERS

8.1 LEAD AGENCY

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Santa Rosa, CA 95403-2829

EIR Manager:	Chris Seppeler, Environmental Review Division
	Scott Briggs, Ph.D., Environmental Review Division Manager

8.2 CONSULTANTS

Listed below are the employees of the consulting firms involved in preparation of this EIR:

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Jayni Allsep	Project Manager
Sean Avent	Project Manager, Environmental Planner / Biologist
Rudy Calderón	Environmental Planner
Suet Chau	Project Manager, Environmental Planner
Kara Baker	Environmental Planner
Anne Ferguson	Environmental Planner
Chris Fitzer	Fisheries Biologist
Lynn Frederico	GIS Specialist
Marie Galvin	Environmental Planner
Vick Germany	Senior Environmental Planner
Charlane Gross	Archaeologist
Angie Harbin-Ireland	Senior Biologist
Lynn Hermansen	Restoration Ecologist
Josh Hohn	Environmental Planner
Loren Huddleston	Archaeologist
Danielle Hughes	Hydrologist
Yates McCallum	GIS Specialist
Heather Phillips	Air Quality Specialist
Chris Shields	Noise Specialist
Brian Vahey	Word Processor
Judith Vaughn	Administrative Assistant

Honey Walters	Air Quality Specialist
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Mark Winsor	Principal In Charge
Susan Yogi	Environmental Planner
Christie Young	Ecologist

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Gregg Wolffe	Health Risk Assessment Specialist
Charanya Varadarajan	Health Risk Assessment Specialist

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John Dowden	Senior Transportation Planner
Michael Carroll	Senior Engineer

APPENDIX A

NOTICE OF PREPARATION OF DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC SCOPING MEETING

COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT
2550 Ventura Avenue, Santa Rosa, CA 95403-2829
(707) 565-1900 FAX (707) 565-1103

NOTICE OF PREPARATION OF DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT and NOTICE OF PUBLIC SCOPING MEETING

Project Title: Syar Instream Mining - Alexander Valley - UPE06-0015

Project Applicant: Syar Industries, Inc.

Environmental Impact Report: The Sonoma County Permit and Resource Management Department has received an application from Syar Industries, Inc. for the Syar Instream Mining - Alexander Valley Project. Sonoma County will be the lead agency and will prepare an Subsequent* Environmental Impact Report (SEIR) for the above project, as the project could have significant impacts on the environment. We are asking for your views regarding the scope of environmental issues that should be addressed in the SEIR.

The project description, figures, and the probable environmental effects of the project are contained in the attached materials. If you wish to comment on the environmental issues that should be addressed in the EIR, please send written comments to Mike Sotak at the address on the letterhead.

If you are a responsible agency, we need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may want to consider the EIR prepared by the County when considering your permit or other approval for the project.

Due to the time limits mandated by State Law, your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

Public Scoping Meeting: The Permit and Resource Management Department will hold a public scoping meeting from **6:00 pm to 8:00 pm** on **May 11, 2006.** This meeting will allow an opportunity for the public to express views regarding the scope of the environmental issues to be addressed in the EIR. These comments will be considered by the County during preparation of the EIR. The meeting will be held at the Geyserville Elementary School, 21485 Geyserville Ave., Geyserville.

For additional information, please email Mike Sotak at (msotak@sonoma-county.org) or call him at (707) 565-7382.

Date: April 14, 2006

Scott Briggs
Manager, Environmental Review Division

* A Subsequent EIR is required (CEQA Guidelines Section 15162) because substantial changes in the project, including the need to amend the ARM Plan, will require major revisions to the Program EIR for the ARM Plan.

Attachment: Project Description and Probable Environmental Effects

PROJECT DESCRIPTION FOR THE SYAR INSTREAM MINING ALEXANDER VALLEY - USE PERMIT AND AMENDMENTS TO THE ARM PLAN AND SMARO FOR A MODIFICATION TO THE APPROACH TO MINING

INTRODUCTION

Syar Industries, Inc. (Syar) proposes to extract sand and gravel from the gravel bars along the Russian River within the Alexander Valley section of the Russian River, near Geyserville between Healdsburg and Cloverdale (see Figure 1), to provide high-quality sand and gravel materials to the building industry. Sonoma County will prepare a Subsequent Environmental Impact Report (SEIR) for the proposed 15-year instream mining program. The SEIR will address the full range of impact areas, but will focus on hydrologic effects of the Adaptive Management Strategy for gravel skimming on eight gravel bars in the Russian River and the impacts resulting from amending the Aggregate Resources Management (ARM) Plan and the Sonoma County Surface Mining and Reclamation Ordinance (SMARO). A summary of the Probable Environmental Impacts is provided below.

This document was prepared by Mike Sotak, Senior Environmental Specialist with the Sonoma County Permit and Resource Management Department, Environmental Review Division. Project information was provided by the applicant as part of its application. This application is available for review at the Permit and Resource Management Department. Please contact Mr. Sotak at (707) 565-7382 or msotak@sonoma-county.org for more information.

PROJECT BACKGROUND

The Russian River within the Alexander Valley has been subject to bar skimming operations by Syar and other operators for almost 100 years. These operations have been intermittent, occurring when gravel and sand has aggraded due to wet season flooding. The most recent skimming of bars in the Alexander Valley which are the subject of the application occurred in 1999. Gravel skimming operations have occurred on gravel bars along both sides of the Russian River, within the Alexander Valley. The eight bars proposed to be skimmed by Syar pursuant to this proposal are all zoned for MR (Mineral Resources) overlay because they have all been mined previously by either Syar or DeWitt.

The 1994 ARM Plan established objectives for instream management program as follows: to maintain a balance between aggredation and degradation that reflects the natural recharge of aggregate; to provide a source of high-quality aggregate materials; and to maintain or increase the flood flow capacity of stream channels and reduce the potential for bank erosion. The ARM Plan's goal with these objectives was to protect habitat for fisheries and wildlife, adjacent uses, and the groundwater characteristics of the adjacent river terraces.

SETTING

The Syar Phase VI bar skimming area is located in the Alexander Valley near Geyserville, on eight gravel bars within a reach of the Russian River extending from upstream of the Geyserville Bridge at River Mile 47.5 to near the Jimtown Bridge at River Mile 54 (see Figures 2 a through c). These built-up deposits produce structurally sound, abrasion-resistant, reasonably clean sand and gravel. This sand and gravel has minimal organic content, making it excellent material for Portland Cement Concrete (PCC) and other high end product uses. The Alexander Valley area is largely rural and agricultural in character, and the bars to be mined are surrounded by vineyards, riparian vegetation, and a few scattered rural residential sites.

The property associated with the skimming operation is zoned LIA (Land Intensive Agriculture) or RRD (Rural Resource District), all with MR (Mineral Resources) combining district overlay.

PROJECT DESCRIPTION

On February 14, 2006, Syar filed an application for a Use Permit and Reclamation Plan to skim sand and gravel from built-up deposits on 110 acres of eight previously mined gravel bars adjacent to the Russian River in the Alexander Valley through an Adaptive Management Strategy. This request for a 15-year Use Permit will require amendments to the ARM Plan and SMARO in order to increase the permit life from 10 to 15 years, to allow Saturday operations, and to allow mining in a manner different then currently allowed for by the ARM Plan/SMARO. Specifically, the proposed Adaptive Management Strategy allows for adjustments to the location and method of mining in response to the results of monitoring data. As part of the Adaptive Management Strategy, annual production quantities may be adjusted at the beginning of each operating season following an annual analysis of the natural recharge of aggregates and the geomorphology and riparian habitat of this section of the Russian River. The objective of the instream management program is to maintain a balance between aggredation and degradation that reflects the natural recharge of aggregate, provide a source of high-quality aggregate materials, and maintain or increase the flood flow capacity of stream channels and reduce the potential for bank erosion.

The Adaptive Management Strategy, was developed in consultation with NOAA Fisheries and the Corps of Engineers in order to produce a sustainable yield of aggregate while simultaneously implementing the objectives of the ARM Plan. The horseshoe skimming approach will be the primary extraction method proposed (see Figure 3 as an example of the horseshoe method) to harvest these bars. This method is intended to reduce lateral bank erosion by removing built-up gravel from the middle of the bar so that high wet season flows run parallel to the banks. Alcoves will be created on the downstream end of selected bars to provide velocity refuge for juvenile fish during moderate to high water flows and to provide a thermal refuge during the summer. Stream channel, side channels, and floodplain skims may also be used in selected area to facilitate habitat enhancement.

Syar proposes to mine the bars in a phased manner so that the skimming of the eight bars will occur on a six-year cycle. The phasing has been developed to produce an average of approximately 300,000 tons of sand and gravel annually. Only one or at most two instream bars will be skimmed in any one season. (See Table 1 for a summary of skimming activities and the bar skimming sequence.) At this removal rate, Syar believes it will be able to ensure that the river resources are protected and better managed such that this aggregate material will be used only for higher-end uses.

In order to proceed with the project, the applicant has requested a Use Permit to skim the eight bars, amendments to the ARM Plan and the SMARO to use the Adaptive Management Strategy and the approval of a new Reclamation Plan. The County will conduct an environmental review for compliance with the California Environmental Quality Act (CEQA) and prepare a Subsequent Environmental Impact Report.

Site Access: The eight gravel bars to be skimmed by Syar will be accessed by using private farm and vineyard roads leading to and from the main roads that are located adjacent to or parallel to either side of the Russian River. Specific access roads (as shown on Figures 4 a and b) include Highway 128, River Road, Hamilton Lane, Banti Lane, Hassett Lane and Alexander Valley Road. Earth moving, support equipment, employee vehicles and haul trucks will use or be transported across these access roads and temporary bridges. Temporary bridges may connect gravel bars during the June to November operating season when access is required across the Russian River or other creeks.

Mining Methods and Operation: The project will use mechanical excavation equipment to skim the aggregate material from the gravel bars, pushing it into temporary stock piles, and load the aggregate material into haul trucks for transportation to the existing Syar aggregate processing plant in Healdsburg. Topsoil and overburden material may be removed from the banks for access to the gravel bars and be temporarily stockpiled for use during reclamation of banks and adjacent side slopes. These slopes will be revegetated. The dry sand and gravel will be skimmed from the bars using mechanical excavation equipment, gravel haul trucks will be loaded on the bars, and the aggregate will be transported from the gravel bars to the Syar processing plant at Healdsburg. No new access will be constructed.

The proposed Adaptive Management Strategy mining approach will differ from the current approach identified in the ARM Plan and will allow for adjustments to the location and methods of mining in response to the results of monitoring data. These guidelines were applied to a recent Biological Opinion for the permitting of gravel removal from gravel bars SD-4 and SD-5 (formerly DeWitt's bars) which Syar has acquired and are two of the eight bars proposed for mining.

The horseshoe skim is the primary extraction method recommended by NOAA Fisheries and proposed by Syar for the bar skimming. This method is intended to reduce lateral bank erosion by removing built-up gravel from the middle of the bar so that high winter flows run parallel to the banks. Prior to skimming, Syar will remove clusters of native riparian vegetation from the area to be skimmed. These clusters of vegetation will be transplanted to the high banks and to the outer edge of the gravel bar. The purpose of relocating these clusters is to provide additional protection against bank erosion during winter high flows. Once the vegetative clusters have been removed from the downstream two-thirds of the gravel bar, and the buffers maintained at the upper one-third and outer edge of bar, skimming will proceed. Cut slopes along the interior sides of the skimmed area will remain at a 2:1 ratio, while the cut slopes at the upper end of the skimmed area are left at a 10:1 ration. The floor of the skimmed area will be established at one-foot above the summer low-flow river level, with the downstream gradient equal to the river level.

In addition to the horseshoe skim, other Adaptive Management Strategies may be used to encourages the creation of alcoves at selected bars to enhance instream habitat for juvenile fish during both the high winter flows and the warmer summer flows, oxbows to facilitate access to tributary streams during spawning, and floodplain skims which remove existing infestation of the invasive giant reed to foster enhancement and regrowth of riparian vegetation.

At the end of each operating season, before November of each year the temporary bridges across the Russian River will be removed, reclaimed banks will have a maximum slope of 2:1, all equipment will be removed from the floodplain, and all bar reclamation will be completed in preparation for the rainy season.

No processing of the skimmed material will occur within the river bar skimming area. All skimmed aggregate will be transported to Syar's permanent plant site on Healdsburg Avenue.

The operator's proposed hours of operation are 6:00 am to 10:00 pm, Monday through Friday, and 6:00 am to 4:30 pm on Saturday. No mining or processing is proposed for Sundays or holidays.

Drainage and Sediment Controls: Bar skimming will occur only in the dry season, June to November. In accordance with ARM Plan standards and additional measures, annual reclamation procedures must be performed prior to the end of October. This will include grading of the skimmed bars to smooth slopes with a longitudinal gradient to match the actual slope of the Russian River.

Best management practices (BMPs) are used to minimize erosion. Buffer zones will separate the skimming operation from the channel. No skimming is proposed in the wetted stram or on the bars below the summer low-flow levels of the river, thereby minimizing the potential for erosion during skimming. The installation and removal of the temporary bridges may result in some minor roiling, though clean gravel will be used.

Prior to removal of equipment from the floodplain, the access through the banks and access roads will be reclaimed. The access roads will be ripped and reseeded and covered with hay. Straw wattles will be installed for further erosion control.

Access and Circulation: Based on the proposed production rate of approximately 300,000 tons for a five month mining season, there will be 12,000 round trip truck tips. If haul trucks transported the skimmed aggregate over 125 days during the mining season, this would result in approximately 192 daily truck trips. The primary access to and from the skimming area will be Highway 101 via one of three on-off ramps, Highway 128, Geyserville Road or Lytton Springs Road. Other public roads will be used along with farm and vineyard roads.

Water Usage and Other Site Improvements: Water for dust control would be provided from nearby farm wells or hauled in by truck.

Reclamation Plan: A Reclamation Plan (Plan) will be reviewed and approved to reflect the proposed project. The reclamation activities would occur as clusters of riparian vegetation are removed for mining and before the end of October, before equipment is removed from the skimming area. These areas would then be seeded and transplanted clusters of riparian vegetation will be watered until equipment is removed and banks are restored. The best management practices will be employed to control erosion

Final reclamation would occur at the end of each skimming season since typically skimming will occur on each bar only once every six years.

ANALYSIS OF PROBABLE ENVIRONMENTAL EFFECTS OF THE SYAR INSTREAM MINING ALEXANDER VALLEY - USE PERMIT AND AMENDMENTS TO THE ARM PLAN AND SMARO FOR A MODIFICATION TO THE APPROACH TO MINING

The County has determined that a Subsequent Environmental Impact Report (SEIR) is required for this project. The scope of the SEIR will be determined through the scoping meeting and possibly through the development of an Initial Study, if required. The SEIR will be tiered off the ARM Plan EIR, which addressed the complete range of environmental impacts for instream mining of the Russian River and was certified by the Board of Supervisors in 1994. As described below, based on a review of the ARM Plan EIR and other documentation related to the proposed instream mining, the County anticipates that the SEIR will focus on environmental impacts related to traffic, access roads, placement of temporary bridges, hydrology, noise, endangered species, air quality and revegetation.

Aesthetics

The project will result in the skimming of eight gravel bars, on a total of 110 acres, within the Alexander Valley portion of the Russian River. Annually, between 15 and 21 acres will be mined. The skimming of the bars may be visible to the public and from nearby residences along the Russian River or from near the Highway 128 bridge. However, the bars within the Alexander Valley are relatively flat, and views from surrounding properties are limited due to the orchards and vineyards located on the terraces and by the cottonwood and willow vegetation along the banks of the Russian River.

The SEIR will use the County Visual Assessment Guidelines to determine the visual impacts of the project. These guidelines include a procedure requiring a photographic analysis to evaluate potential impacts.

Agricultural Resources

The project site is not currently used for agricultural purposes since the orchards and vineyard are on the river terraces. The applicant proposes to use existing access roads through the agricultural area as haul routes to transport the sand and gravel from the bars to the main roadways. No removal of orchard trees or vines will be required for access. The skimming of instream bars will not result in further disturbance to the area.

The SEIR will assess and determine impacts to agricultural resources and farmland.

Air Quality

The proposed bar skimming will require the use of both onsite mobile equipment and haul trucks to transport the sand and gravel between the skimming bar(s) and the Syar Healdsburg processing facility. The use of both onsite mobile equipment and haul truck has the potential to degrade air quality. The SEIR will evaluate project emission of criteria pollutants including dust created along dirt access roads and diesel emissions generated by trucks during June through November.

Biological Resources

The applicant submitted a Biological Assessment for the listed Pacific salmonids which evaluates the potential effects of skimming of aggregate from Alexander Valley gravel bars on salmonids listed under the Endangered Species Act. The species of potential effect in the project area, River Mile 47.5 to 54, are the Central California Coast coho salmon, California Coast Chinook salmon, and Central California Coast steelhead. The proposed plan for skimming represents a departure from the traditional approach contained in the ARM Plan by employing an Adaptive Management Strategy to reduce environmental impacts by site-specific planning of skimming activities on individual bars that take into account unique landforms, vegetation patterns, salmonid spawning and rearing habitat, tributary stream locations, bedload transport, and other factors. The bars were selected to take advantage of physical and channel features and hydraulic characteristics that promote sediment deposition. Although the proposed project is not likely to result in significant impacts to coho salmon's critical habitat, the SEIR will evaluate the Biological Assessment, to be prepared by NOAA Fisheries. It will evaluate the direct, indirect and cumulative effects to the steelhead and Chinook to assess the likelyhood of adverse affect these species.

Habitat enhancement features such as alcoves and oxbows will be created on selected bars to provide refuge areas for fish and to facilitate access for fish to reach tributary streams during spawning.

No other special status plant or animal species were identified.

The gravel bars contain naturally occurring vegetation, generally concentrated along the edge of the summer low-flow channel and along the high bank adjacent to the terraces. Native riparian vegetation removed from the areas subject to skimming will be transplanted to the fringes of the bar. Cottonwood trees will remain in-place.

Cultural Resources

There are no known historical, archaeological, unique paleontological or unique geological resources, or human remains within the bar skimming project area. The project area is subject to annual flooding and the river course is in a constant state of flux. Therefore because these bars are continually disturbed by natural processes the proposed bar skimming activities will not impact cultural resources.

Geology

All of the instream bars to be skimmed consist of alluvial deposits transported through the Russian River system. The renewable deposits of sand and gravel originate from basaltic flows and a variety of metamorphosed sandstone and shale. There is no topsoil on the gravel bars. The SEIR will evaluate the potential for erosion in the cut banks, the impacts of flooding on the gravel bars, and the stability of the bars.

Hazards and Hazardous Materials

There will be no fuel storage, fueling, or storage of hazardous materials within the instream bar skimming area. All fueling of operational equipment used for skimming will occur in designated areas on the terrace. A specific Spill Prevention, Containment and Countermeasure (SPCC) Plan will be submitted for review and approval. The SPCC Plan will address containment of small releases that may occur while equipment is operating on the gravel bars. The SEIR will assess the potential hazardous materials to enter groundwater or the river system.

Hydrology and Water Quality

The ARM Plan identified standards for instream mining operations that were designed to mitigate the potential long-term adverse effects of mining on water quality, flooding and groundwater within designated portions of the Russian River. The skimming and reclamation of instream mining bars procedures are proposed to be modified in order to meet the objectives of the ARM Plan and Adaptive Management Strategy now proposed by resource agencies.

The ARM Plan requires monitoring of channel conditions to provide the data necessary to make future management decisions. Operating standards identified in the ARM Plan for development of instream gravel extraction are based on the following objectives: 1) protection of instream biologic resources and the riparian corridor; 2) no net long-term downgrading of the channel; 3) no reduction in the flood capacity of the channel; and, 4) minimum interference with the location and shape of the channel.

Consistent with these objectives, Syar proposes a skimming operation that varies from the 2 percent minimum cross-section slope of the ARM Plan to an Adaptive Management Strategy. The Adaptive Management Strategy allows for adjustments to the location and method of mining in response to the results of monitoring geomorphic and hydraulic data. The longitudinal gradient at the floor of the skimmed area will be graded to match the slope of the summer low-flow level of the Russian River, the buffer on the upper one-third of each bar will be retained, buffers along the outer edge of each bar measuring 20 percent of the channel width will be maintained, transplanting riparian vegetation will occur, and modifications to the inside slopes will be site specific for each bar. The downstream end of the skimmed area will be left open to allow water to flow through during the winter high-flow. Alcoves on selected bars will be created, extend down to the summer low-flow level, and be open to the channel at the downstream end of the bar to prevent entrapment of fish. The height and width of the slopes along the perimeter of the skimmed areas will vary depending on the natural ground elevation prior to skimming.

Skimming will be focused on specific bars that contain large gravel deposits where the geomorphic and hydraulic analysis concludes that sand and gravel can be removed without negative impacts. No skimming is proposed in the wetted stream or on the bars below the summer low-flow level of the Russian River.

Annual reclamation procedures will include grading the skimmed bars to smooth slopes to reduce the potential for ponding and fish entrapment. Large woody debris will be placed on the bars so that the debris is transported and naturally placed by winter water flows.

The SEIR will review the proposed skimming approach, the Adaptive Management Strategy to modify the skimming approach, ARM Plan modifications, and applicant's designs for bank stabilization.

Land Use and Planning

The proposed instream mining area is consistent with the County General Plan, the County Zoning Code, the Aggregate Resources Management Plan (ARM Plan), and other applicable County plans. The skimming bar areas are zoned with a MR (Mineral Resource) overlay. No further zone change is required for the proposed skimming. However, the proposed mining approach (the Adaptive Management Strategy), Saturday operations, and duration of Use Permit will require amendments to the ARM Plan and County Mining Ordinance.

The land use within the Alexander Valley reach of the Russian River, adjacent to the skimming bars, is predominately vineyards. Both Highway 101 and State Route 128 are scenic roadways. Rural residences and farm structures are located on or near some of the parcels. Equipment, employees and haul trucks will use existing access roads in the vicinity of the bar(s) to be skimmed each season, possibly causing disturbance to residences in the vicinity of the access roads.

The SEIR will analyze the land use and planning impacts of skimming and hauling of material from the bars and assess the consistency of these activities with the Sonoma County General Plan Land Use Element.

Noise

The project will generate noise from the use of heavy construction equipment, general grading activities, and haul trucks. Truck traffic will use private vineyard and farm roads to access the skimming bars. Noise impacts will be created by the use of heavy construction equipment skimming, stockpiling and restoration activities on the gravel bars and by the haul trucks along private and public roadways.

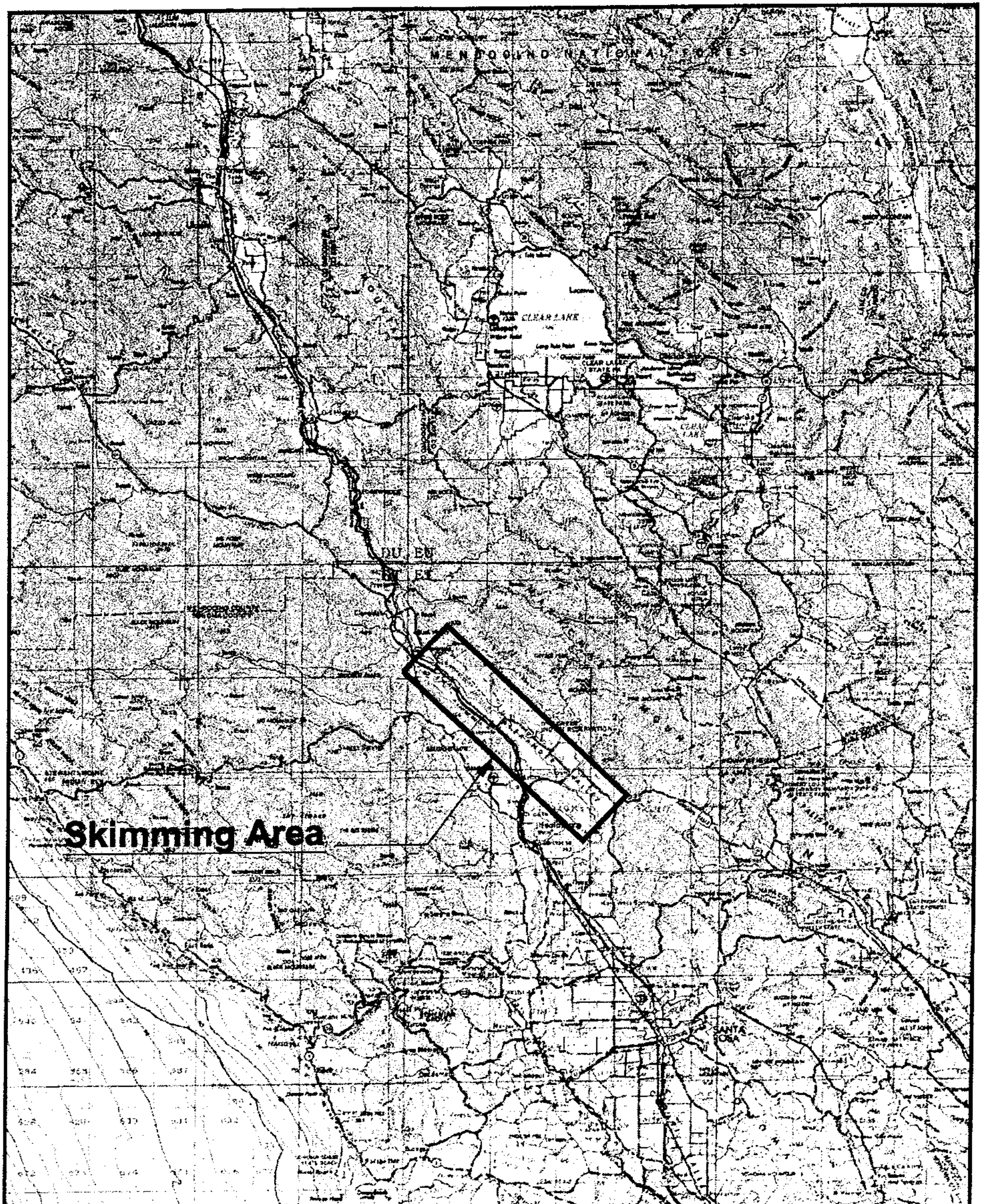
The SEIR will analyze the noise impacts of skimming and hauling of material from the bars and assess the consistency of these activities with the Sonoma County General Plan Noise Element.

Transportation/Traffic

The project will generate approximately 100 round-trip truck trips per day along the haul route during the 125-day skimming season. Haul trucks can make a round trip from the Alexander Valley to the Syar aggregate processing plant in Healdsburg in approximately one hour. With a ten hour workday, ten to twelve trucks an hour will enter and depart the skimming bar(s) during the four-month mining period.

Trucks will use private farm and vineyard roads, State Route 128, Highway 101, River Road, Alexander Valley Road, Hamilton Road, Banti Lane, and Hassett Lane. Other than State Route 128 and Highway 101, the other roadways will be used only when they are in the vicinity of the bar(s) that are being skimmed that season. The haul trucks will impact commute traffic on Highway 101 during the AM and PM peaks. Truck traffic in along the farm and vineyard roads will impact farming operations, particularly during the harvest period.

The SEIR will analyze the traffic impacts of skimming and hauling of material from the bars and assess the consistency of these activities with the Sonoma County PRMD's traffic guidelines.



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Regional Location Map

Syar Industries, Inc.
Mining & Reclamation Plan
Russian River Gravel Bar Skimming,
Alexander Valley Area - Sonoma County

1
Figure

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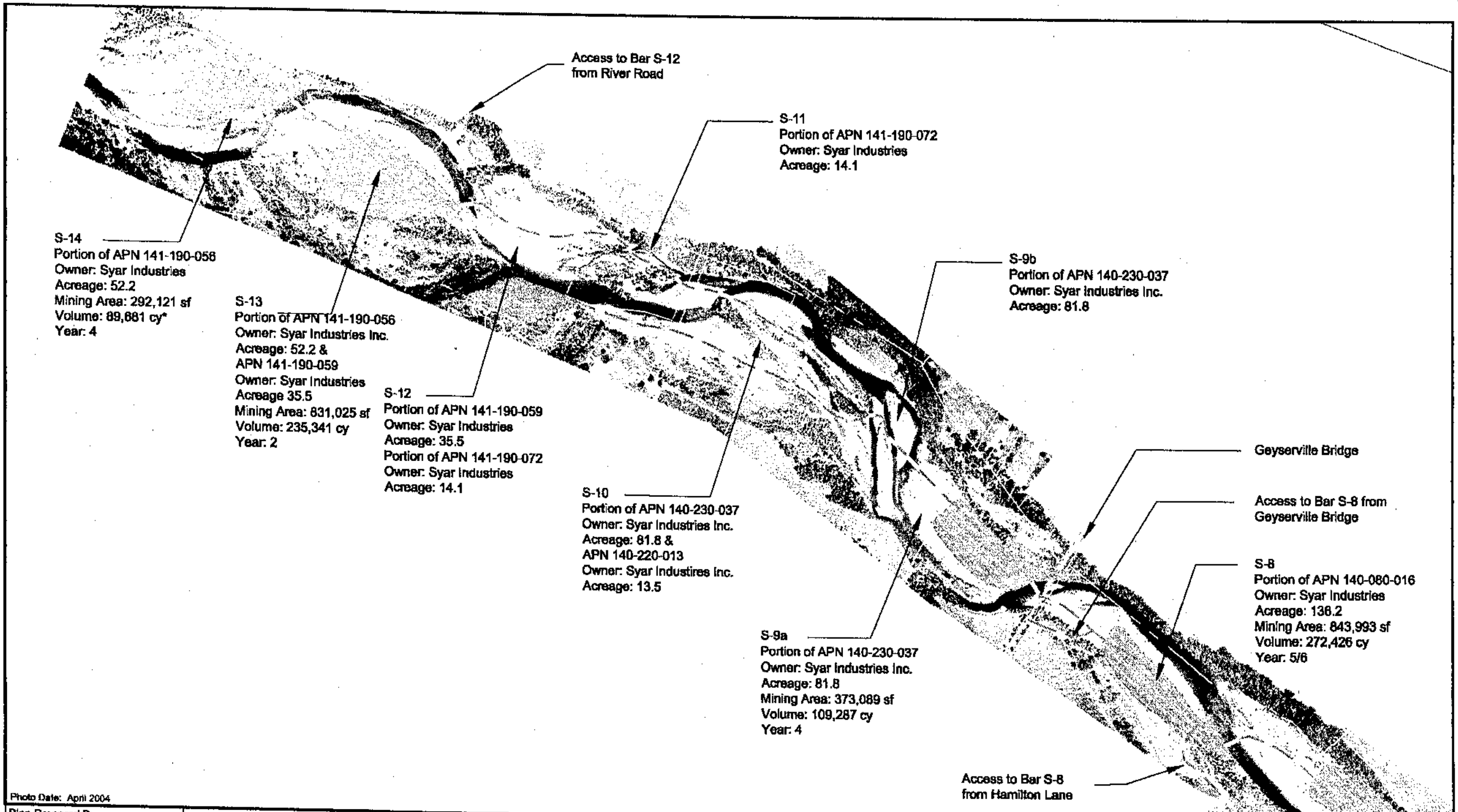

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LEGEND

PROPERTY LINE
OUTLINE OF NUMBERED BARS
HAUL ROUTE AND ACCESS
AREA SUBJECT TO SKIMMING

NORTH

SCALE IN FEET
0 400 800 1,600

Syar Industries, Inc.
Mining & Reclamation Plan
Russian River Gravel Bar Skimming
Alexander Valley Area - Sonoma County

Ownership Map & Bar Key Map

2a
Figure

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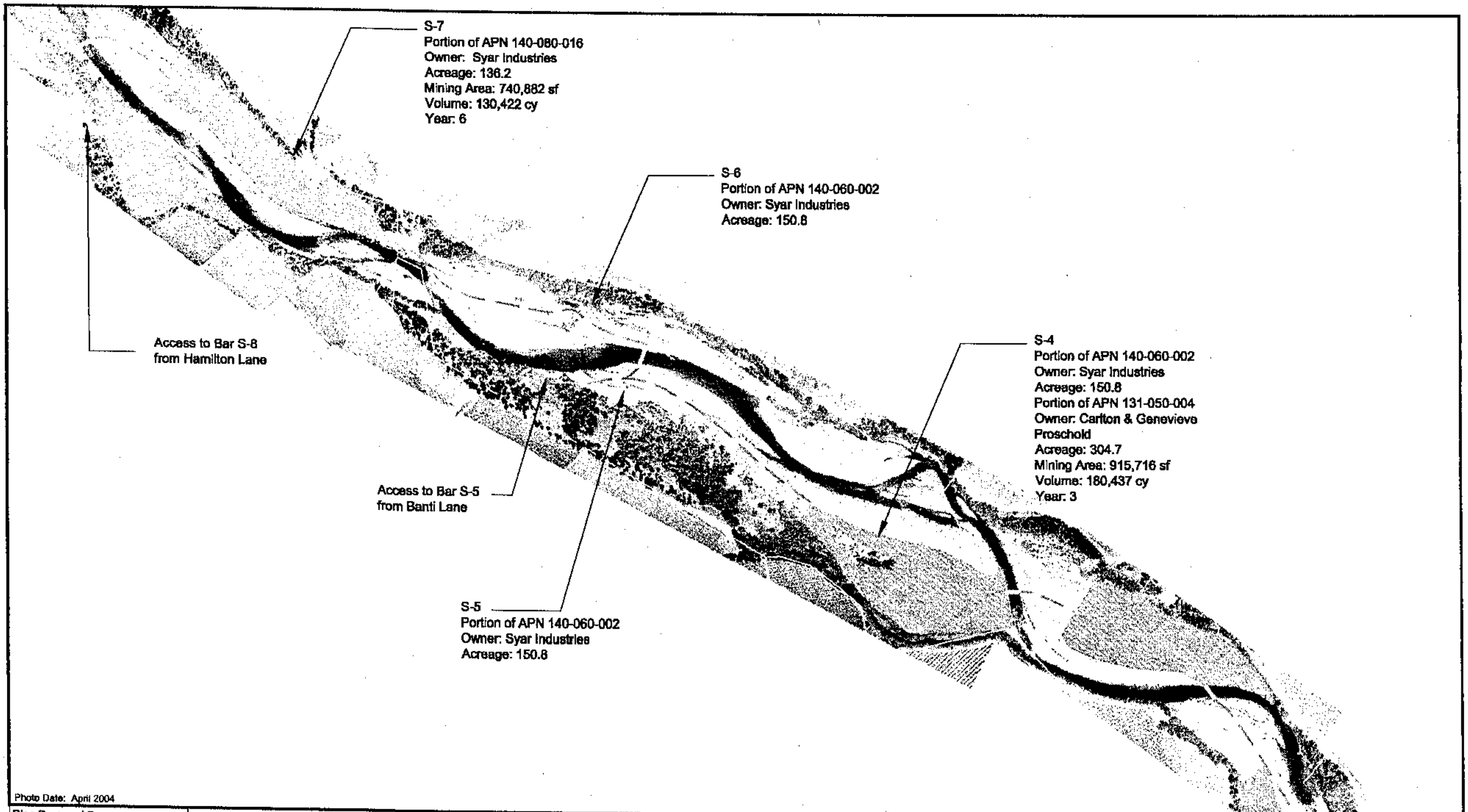

Photo Date: April 2004

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LEGEND

PROPERTY LINE

OUTLINE OF NUMBERED BARS

HAUL ROUTE AND ACCESS

AREA SUBJECT TO SKIMMING

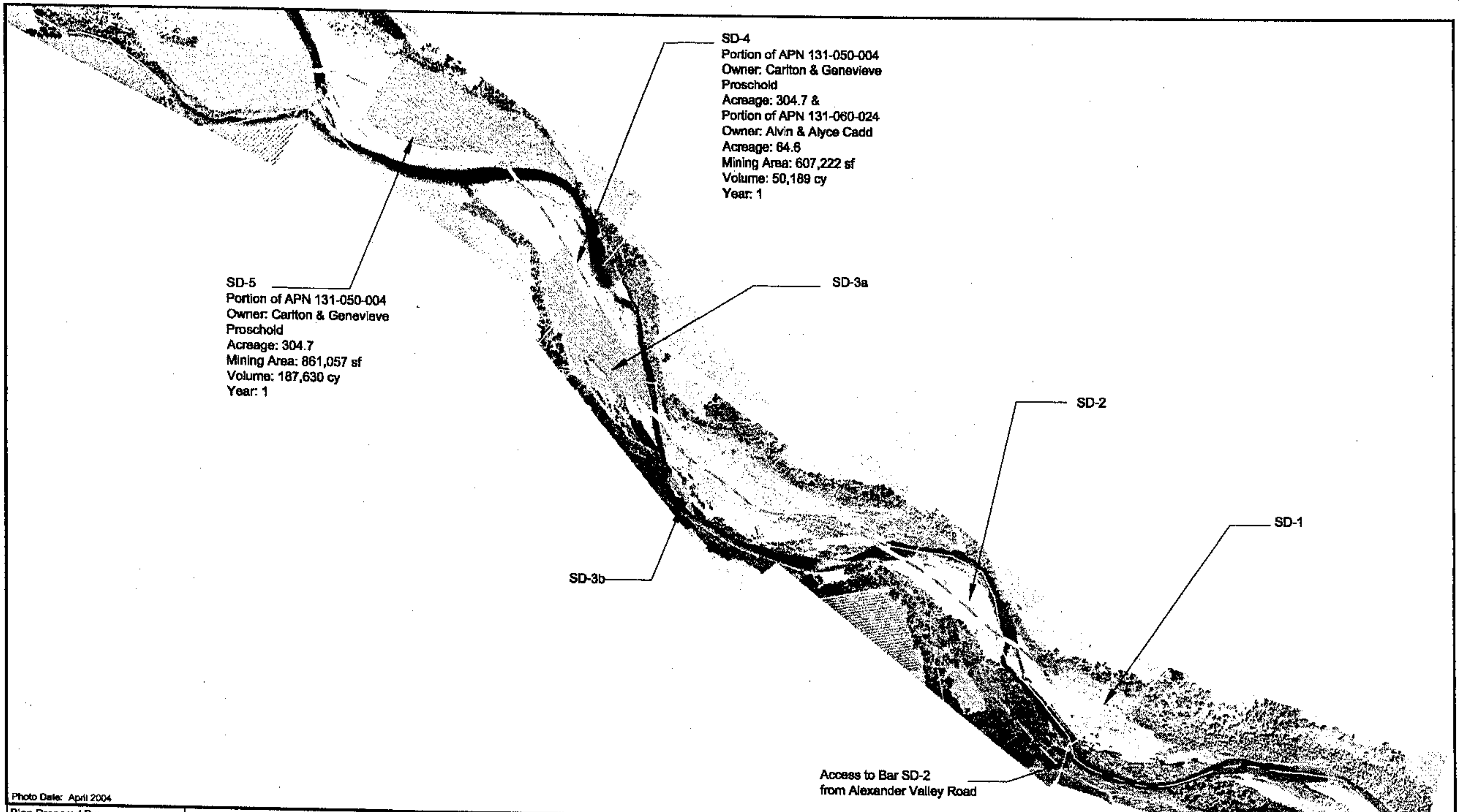
NORTH

SCALE IN FEET
0 400 800 1,600

Syar Industries, Inc.
Mining & Reclamation Plan
Russian River Gravel Bar Skimming
Alexander Valley Area - Sonoma County

Ownership Map & Bar Key Map

2b
Figure



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LEGEND

PROPERTY LINE
OUTLINE OF NUMBERED BARS
HAUL ROUTE AND ACCESS
AREA SUBJECT TO SKIMMING

NORTH

SCALE IN FEET
0 400 800 1,600

Syar Industries, Inc.
Mining & Reclamation Plan
Russian River Gravel Bar Skimming
Alexander Valley Area - Sonoma County

Ownership Map & Bar Key Map

2 C
Figure

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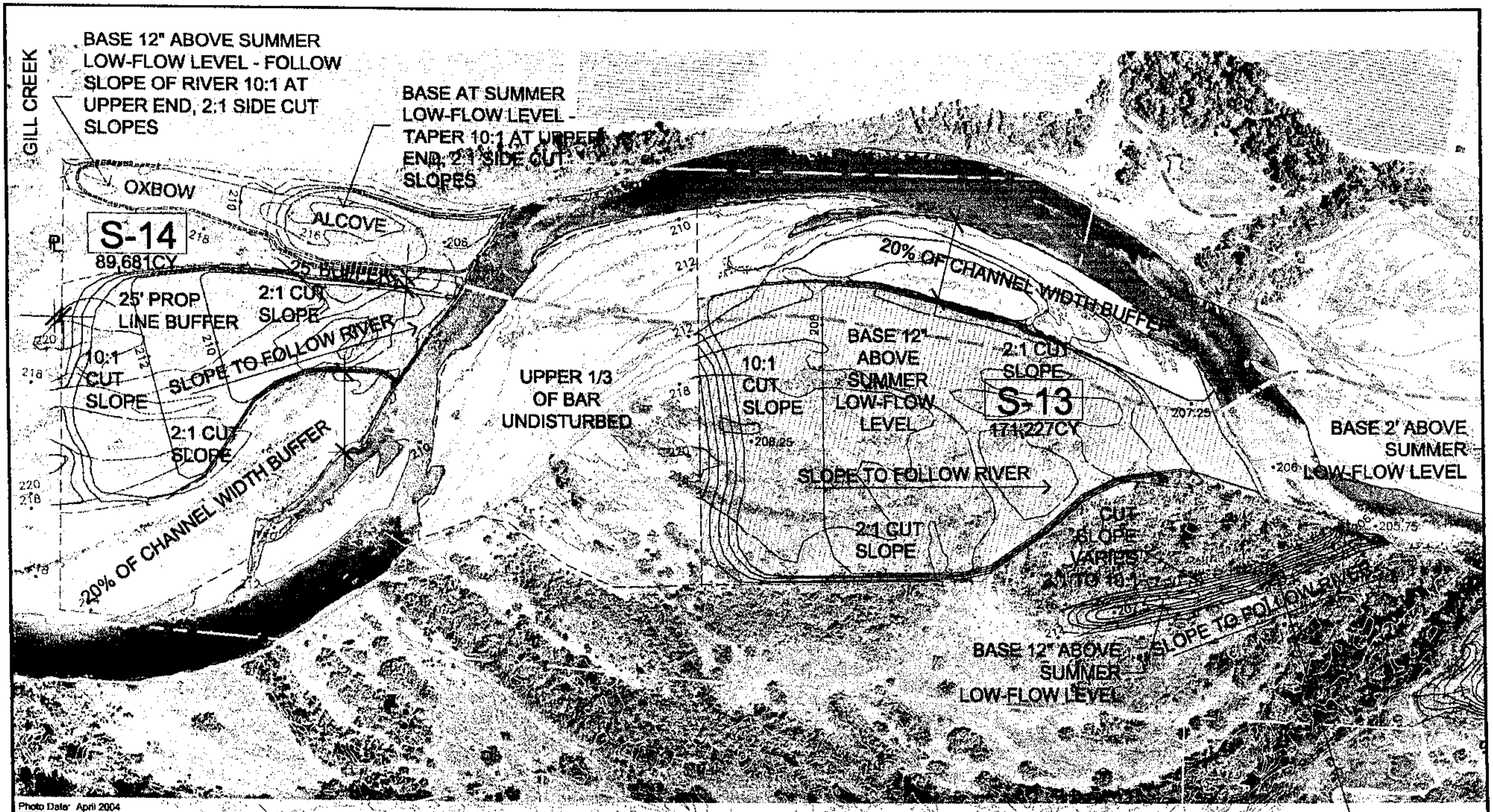

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In Consultation With:
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Napa, CA 94558
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LEGEND

PROPERTY LINE	AREA SUBJECT TO SKIMMING
OUTLINE OF NUMBERED BARS	* EXISTING WELL
HAUL ROUTE AND ACCESS	

NORTH

SCALE IN FEET
0 100 200 400

Syar Industries, Inc.
Mining & Reclamation Plan
Russian River Gravel Bar Skimming
Alexander Valley Area - Sonoma County

Skimming Plan

3a
Figure

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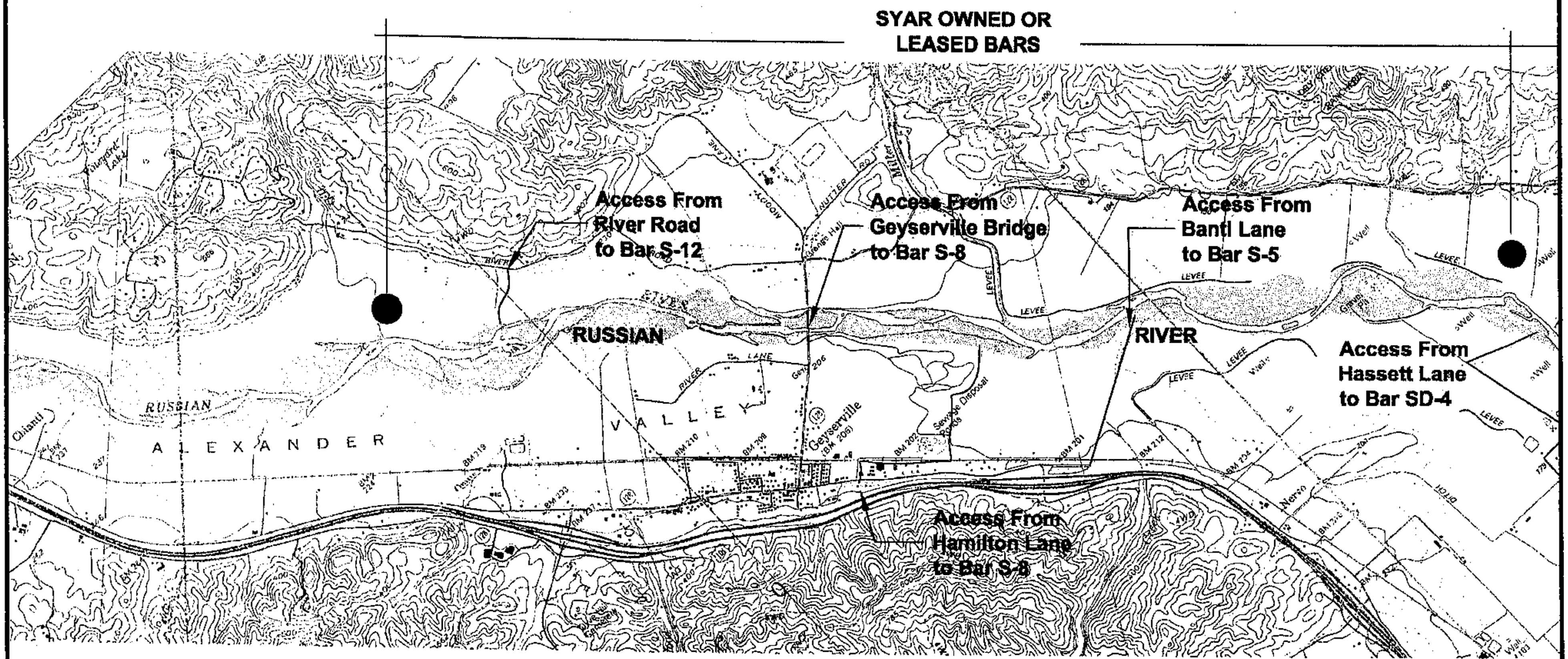

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Location Map/Access to Bars

Syar Industries, Inc.
Mining & Reclamation Plan
Russian River Gravel Bar Skimming, Alexander Valley Area - Sonoma County

SCALE IN FEET
0 1,500 3,000 6,000

NORTH

4

Figure

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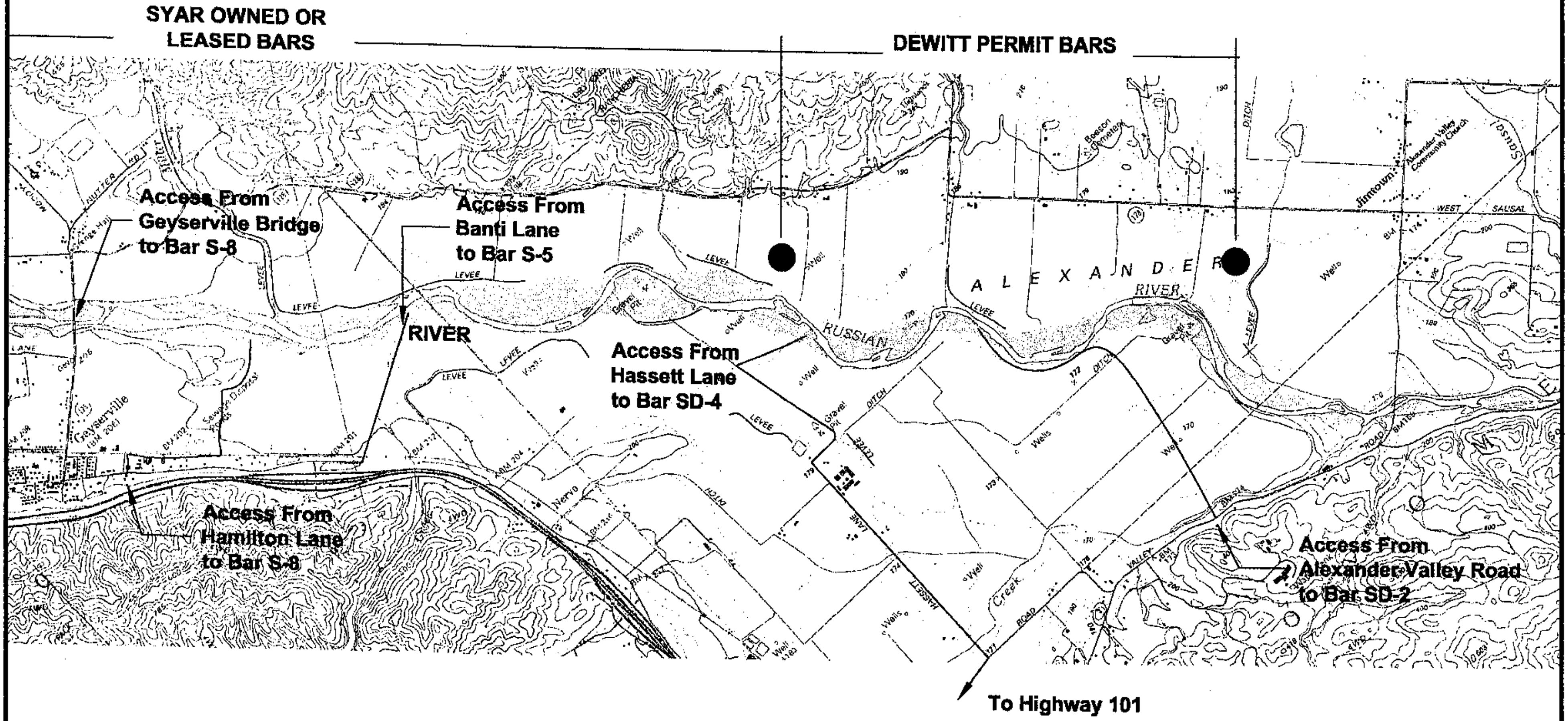

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Location Map/Access to Bars

Syar Industries, Inc.
Mining & Reclamation Plan
Russian River Gravel Bar Skimming, Alexander Valley Area - Sonoma County

4b

Figure

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TABLE 1: SUMMARY OF SKIMMING ACTIVITIES

BAR	APN	PARCEL SIZE (AC)	PROPOSED SKIMMING AREA (AC)	QUANTITY (CY)	PHASE
S-14	141-190-056	52.2	6.7	89,681	4
S-13	141-190-056 141-190-059	52.2 35.5	19.1	235,230	2
S-9a	140-230-037 140-080-016	81.8 136.2	8.6	109,287	4
S-8	140-080-016	136.2	19.4	272,426	5/6
S-7	140-080-016	136.2	17.0	130,422	6
S-4	140-060-002 131-050-004	150.8 304.7	21.0	180,437	3
SD-5	131-050-004	304.7	4.3	187,630	1
SD-4	131-050-004 131-060-024	304.7 64.6	13.9	50,189	1
TOTALS			**110.0**	**1,255,302**	

Notes:
1) Extraction quantities are estimates which may vary based on annual rate of natural recharge, and are not intended as maximum permitted extraction quantities.
2) Precise quantities will be determined annually based on Adaptive Management Strategy (refer to Section 4.061)
3) Estimated saleable tonnage = 1,882,953 tons (1,255,302 cy x 1.5 tons/cy = 1,882,953 tons)
4) Phasing of skimming activity is tentative, and may vary based on analysis through the Adaptive Management Strategy.

APPENDIX B

SUMMARY OF WRITTEN SCOPING COMMENTS

SYAR INSTREAM MINING - ALEXANDER VALLEY PROJECT

SUMMARY OF WRITTEN SCOPING COMMENTS

received through May 17, 2006

State Clearinghouse and Planning Unit, Office of Planning and Research, Sacramento - April 18, 2006

- Clearinghouse received Notice of Preparation (NOP) for the Syar Instream - Alexander Valley Project.
- Clearinghouse responsible for forwarding any comments received to the County.

State Department of Fish and Game, Yountville - April 21, 2006 and May 2, 2006

- DFG review indicates that the project may result in changes to the fish and wildlife resources, therefore a *de minimis* determination is not appropriate.
- Provide a complete assessment of habitats, flora and fauna within and adjacent to the project area. Include reasonable foreseeable direct or indirect changes.
- DFG recommends reviewing the survey and monitoring protocols and guidelines.
- CESA Permit must be obtained if the project has the potential to result in the take of a listed endangered species.
- Activities that will divert or obstruct the natural flow of water may require a Streambed Alteration Agreement.

Bill Thompson, Geyserville - May 9, 2006

- Property owner in Alexander Valley.
- 192 daily truck trips must be considered with the River Rock Casino daily and weekend vehicle trips.
- Casino expansion should be considered.
- Consider the impacts to wildlife and salmon.
- Impacts from noise, pollution and traffic will erode the peace and quiet enjoyment of the area and should be considered in the EIR.

David Loop, Geyserville

- Member of the Geyserville Planning Committee.
- Gravel is a great renewable resource.
- Mining the bars is a good idea.
- Consider using rail to haul mined material.
-

Wes Brubacher (written statement read by Johanna Vanoni at Scoping Meeting), Geyserville

- Geyserville bridge was damaged by misdirected water caused by the gravel bar.
- Recommends lowering the gravel bars to the level of the river bed.
- There is a lot of erosion of agricultural land and thus siltation downstream.
- Lowering gravel bars would control erosion and therefore siltation.

- Erosion is undermining roadways, River Road and River Lane.
- Poor water quality in the middle and lower reaches of the river caused by siltation.

Edward McCutchan, Geyserville (Also submitted oral statement)
- Bank erosion is occurring.
- Need to remove gravel to lower the buildup of "load accumulation" so there is more room for water in the river.
-

Don McEnhill, Healdsburg (Also presented a oral statement at the Scoping Meeting and this written statement contained a CD with two documents, [1] An Evaluation of Regulations, Effects, and Management of Aggregation Mining in Northern and Central Coastal California, Laird, A., et.al., NMFS, September, 2000 and [2] Hungry Water: Effects of Dams and Gravel Mining on River Channels, Kondolf, G.M., 1997)
- Represents Russian Riverkeeper
- Sees no acknowledgment or mitigations proposed for the basic impacts of gravel mining - creating a bedload trap and increasing the sediment deficit in the Russian River.
- Achieving flood control or bank stability through gravel mining is transitory and any benefits may be reversed without continued mining.
- In addition to an ARM Plan amendment, feels that the General Plan needs to be amended.
- Environmental review necessary to address views of property owner, it should be clearly noted that farming occurs in the floodplain and that a floodplain receives and spreads out peak flow.
- EIR should acknowledge that sever channel degradation occurs in all reaches of the Russian River, and that only a small portion of degradation is due to Lake Mendicino but the primary reason for degradation is gravel mining.
- Riparian forest, that would normally protect vineyards are gone because of past mining activities.
- Cumulative impacts must include upstream and Alexander Valley extraction areas, including Ukiah Valley, Shamrock and Syar/Dewitt.
- Thorough cumulative impact review and discussion of impacts, including measuring cross-sections, thalweg, a safe yield, and future years of mining.
- Applaud adaptive management but won't know if there are impacts until the next high-flow period, too many uncertainties.
- With adaptive management, the public will not have the opportunity to comment on changes.
- Identifies deficiencies in the ARM Plan.

Harry Black, Geyserville
- Has been farming for 25 years, family in valley for 5 generations and has witnessed flood damage.
- Installations of the dams crated an artificial river, running consistently, at higher levels for longer periods of time, with more eroded banks and building up of gravel.
- Cannot afford to leave the river alone, must remove gravel.
- Geyserville Bridge damaged because of buildup of gravel.
- Support removal of gravel.

Brian Hines, Santa Rosa (also spoke at the Scoping Meeting)

- Represents Trout Unlimited.
- Provided a website for the Russian River Watershed Council, .

Larry Cadd, Geyserville (also spoke at the Scoping Meeting)

- Lived in area 57 years, combine family acreage appx. 350 acres on both sides of the river.
- Survival of families farm is threatened by flooding. Added burden placed on river when dams constructed.
- No project alternative should consider impacts to farms and agricultural values.
- Hydrology in Alexander Valley different than other parts of the river.
- Studies should undergo peer review to reach a consensus based on sound science.
- Damage and economic loss from flooding can be staggering, provides examples.
- Evaluate both the views of those directly impacted by the flooding and those who experience no direct loss.
- Supports use of adaptive management for channel maintenance and resource use.

David Fanucchi, Geyserville (Also spoke at Scoping Meeting and submitted additional photo's with written statement)

- Submitting photos of the December 2005 New Years eve flood event.
- Mining during the 1970's through part of the 1990's stopped the pouring of sand and gravel into the fields.
- Back to where the flooding was in the 1950's and 1960's when mining did not occur, high bars and vegetation choking the river flow.
- Review the cross-sections to see if they indicate elevation in the level of the bars.
- River replenishes itself.
- Bar skimming ma save riparian and agricultural lands.
- Supports project.

APPENDIX C

SUMMARY OF SCOPING MEETING

SYAR INSTREAM MINING - ALEXANDER VALLEY PROJECT

SUMMARY OF SCOPING MEETING

6:00 PM on May 11, 2006
at the Geyserville Elementary School

Introduction, Mike Sotak, PRMD

Project Description, Kevin Guy, LSA/MCA

Project Planner, Melinda Grosch, PRMD

Richard Ruey, Healdsburg

- Pioneer family that has lived in the Alexander Valley since the 1800's.
- Remembers the river as being deep before the Warm Springs Dam was constructed.
- Deep holes are gone, need to recreate deep holes for fish habitat by removing gravel.

Dave Collin, Healdsburg

- Lives in Healdsburg
- River used to be deep, now gravel almost fills channel and there is a loss of soil, approximately 20 feet of sandy loam.
- Removing gravel will help the river conditions.

Edward McGutchon, Healdsburg

- Old Alexander Valley family, since 1890's.
- Near the railroad campground they lost 3 acres of farm land and had to try to rock in the bank to protect, but the river continues to undercut.
- Gravel bars are growing and pushing the water to the outside, causing more bank erosion and middle of the river is continuing to increase elevation.
- There is a need to lower the level of gravel in the river.
- Skimming is the easiest and best way to solve the erosion problem

David Loop, Geyserville

- Member of the Geyserville Planning Committee.
- Gravel is a great renewable resource.
- Mining the bars is a good idea.
- Consider using rail to haul mined material.

Dane Petersen, Geyserville

- Duncan Vineyard just south of the Alexander Valley Bridge.
- Flooding has occurred in the vineyards, flood waters bring a lot of debris into the vineyard, costly to remove, tears out wire.

- Bank erosion is occurring.
- Need to remove gravel so there is more room for water in the river.
- Lowering the bars would useful.
- Truck traffic would be heavy but manageable.

Ray Pigoni, Geyserville

- Family has been in the Alexander Valley since the 1920's.
- They have lost about 300 feet of riparian lands to the river.
- There is no question of what needs to be done, has walked the river and it is extremely high in the middle.

John Tankersley, Cloverdale (Submitted photo's)

- Represents vineyards for the Trione` family.
- Need to remove some gravel to help with erosion.
- It is extremely expensive to stablize the creek.
- Lost 50 to 100 feet of land along a one-half mile stretch of the river, all topsoil is going directly into the river.
- Gravel bar tops are exposed during high water.
- Losing riparian habitat.
- Mining in the river can stop erosion and make good use of a valuable resource.

Larry Cadd, Geyserville

- Life long resident of area, when Coyote Dam was built, the County agreed to keep the channel open.
- In 1964 gravel bar near his property pushed water completely out of the channel for two weeks.
- If the opportunity is lost to remove this gravel, we are looking at the river wiping out a lot of agricultural land.
- Project may allow some of the fish to enter small creeks that are currently cut off by gravel.
- Great impacts to agricultural lands if the project does not proceed.
- The hydrology should evaluate the reduction in the channel capacity from not removing gravel.

John Dayton, Geyserville

- There is more meandering of the river due to the lack of a clear channel.
- There is no time to wait, need to remove gravel as soon as possible.
- Gravel buildup caused bridge failure.

Wes Brubacher (statement read by Johanna Vanoni), Geyserville

- Geyserville bridge was damaged by misdirected water caused by the gravel bar.
- Recommends lowering the gravel bars to the level of the river bed.
- There is a lot of erosion of agricultural land and thus siltation downstream.
- Lowering gravel bars would control erosion and therefore siltation.
- Erosion is undermining roadways.

Don McEnhill, Healdsburg (Also submitted written scoping letter)

- Represents Russian Riverkeeper
- A lower river lacks deposits of gravel.
- There is a lot of incision in Mendocino County on the Russian River due to mining.
- Upstream of this proposed extraction area, Shamrock is mining and their mining has not reduced the amount of erosion.
- Spawning habitat has been reduced in the Cloverdale area due to mining.
- Removing gravel creates a bedload trap.
- When gravel bars are removed, the river moves faster and there is greater bank erosion.
- The Geyserville Bridge was built before the Russian River was dammed upstream. The piers were not deep and became unstable due to increased channel velocity.
- Banks need to be stabilized.
- How will Syar mitigate the loss of fish habitat?

Bill Munselle, Geyserville

- Lives on River Road and supports a reasonable and sustainable gravel skimming project.
- Supports the Syar proposal.

David Fanucchi, Geyserville (Submitted photo's)

- Lived in the area since 1953.
- There was a significant amount of overflow, even though the event was not a great as previous flood events, though the river cannot take the amount of water due to the sizes of the bars within the river.
- Debris is hard on vineyards and takes out rows of vines and wire.
- The Federal governments was to maintain the river after the dam was constructed, but have not done so.
- When the bars are being skimmed, the river could handle more flow, but concurs that in the past the mining companies probably went overboard in removing gravel.
- It is difficult for landowner to maintain banks and difficult to secure permits.
- The Russian River is no longer a pristine river, therefore needs to be managed.
- Likes the idea of removing some of the vegetation and relocating willows from the center of the river to the banks.

Dave Pourroy, Cloverdale

- Shamrock's mining has been a good thing in the Cloverdale area.
- Willows in the middle of the river have forced the river to the side and may have been a factor in the loss of the bridge.

Dennis Murphy, Healdsburg

- Alexander Valley resident and member of the Sonoma County Planning Commission, will not be able to sit because he is an adjoining property owner.
- Looking to maintain channel capacity.
- Look as the significant impacts of the "No Project" alternative, movement of the river, and erosion.

Johanna Vanoni, Geyserville

- Family lived north of Geyserville Bridge since 1900's.
- River deposits lots of gravel in her area.
- During World War II, a plane flew under the Geyserville Bridge.
- Gravel on the bar is higher in her area.
- In bigger flood events, there are many parts of Geyserville that would be flooded.
- There is a need for a healthy local gravel industry.
- Fish need access to tributary streams.

Brian Hines, Santa Rosa

- Represents Trout Unlimited.
- Russian River is a sediment starved system due to both upstream dams.
- There needs to be a careful study of the effects of removal of gravel on the river's desire to have more sediment "hungry water system".
- There is an interactive information system for the Russian River.

Will Schuman, Geyserville

- Supported the project.

APPENDIX D

RIVER ENHANCEMENT PLAN
FOR SYAR INDUSTRIES REACH

DRAFT

RUSSIAN RIVER – ALEXANDER VALLEY

RIVER ENHANCEMENT PLAN

FOR SYAR INDUSTRIES REACH

(GILL CREEK CONFLUENCE TO JIMTOWN

BRIDGE)

Prepared for

Syar Industries, Inc. Napa, CA
Contact: John Perry, Senior Engineer

Sonoma County PRMD Interagency Group
Contact: Jennifer Barrett, Asst. Planning Director PRMD

Prepared by

SWANSON HYDROLOGY + GEOMORPHOLOGY
500 Seabright Ave. Ste. 202
Santa Cruz, CA 95062
(831) 427-0288

August 2008

Executive Summary

Syar Industries, Inc. (Syar) proposes to integrate a River Enhancement Program (REP) into an instream gravel mining use permit application for the Russian River in the Alexander Valley between Gill Creek and the Jimtown Bridge. The purpose of the REP is to enhance river habitat and ecological conditions that have been degraded by past land use practices and land reclamation activities which have compromised some of the dynamic geomorphic processes associated with riparian and aquatic habitat creation and sustenance. Another key aspect of the REP is to merge river enhancement projects with instream mining activities that can help control of lateral erosion and maintain channel flood capacity, which are key objectives of the Sonoma County Aggregate Resources Management Plan (ARM Plan). The REP has been created through an Interagency Group[1] effort which identified beneficial projects that could be carried out on Syar's property in coordination with instream mining.

The REP consists of six specific habitat enhancement projects that would be implemented by Syar and programmatic enhancements that would be completed with participation by Syar and other river stakeholders. The six specific habitat enhancement projects would create two types of habitat (oxbows and alcoves) along the river corridor (**Figures ES-1a through ES-1c** provide an overview of the project area and locations of these projects). The "oxbows" are backwater swales situated along the margins of the active river channel and are designed to promote floodplain connectivity and recruitment of native riparian vegetation. The proposed "alcoves" mimic natural landforms that are created by erosion against a resistant bank at the downstream end of gravel bars. The alcoves are important habitat features for salmonids as they provide: (1) velocity refuge during moderate to high river flows in winter, (2) cool water thermal refuge during the summer season, and (3) where situated near the mouths of tributary streams, holding areas for adult fish migrating to access tributary spawning areas. A constructed/ enhanced alcove is proposed at the mouth of each of the three eastern tributaries that feed into the project reach (i.e., Gill, Miller and Rancheria Creeks).

---

[1] The interagency review group includes representatives from Sonoma County PRMD, NOAA Fisheries, U.S. Army Corps of Engineers, North Coast Regional Water Quality Control Board and the California Department of Fish and Game.

The programmatic REP projects include:

- Riparian forest planting,
- Streambank enhancements,
- Placement of large woody debris,
- *Arundo donax* control, and
- Salmonid habitat enhancement projects in the lower reaches of tributary streams.

The programmatic enhancement projects have been developed to a conceptual level at example sites throughout the project reach. These include locations where there are gaps in the riparian corridor, where bank erosion is severe, and/or where shoreline conditions are degraded from an aquatic and riparian habitat perspective. Specific project locations and types would be developed during annual adaptive management planning overseen by Sonoma County Permit Resource Management Department (PRMD) and the Interagency Group as discussed in Section 3.

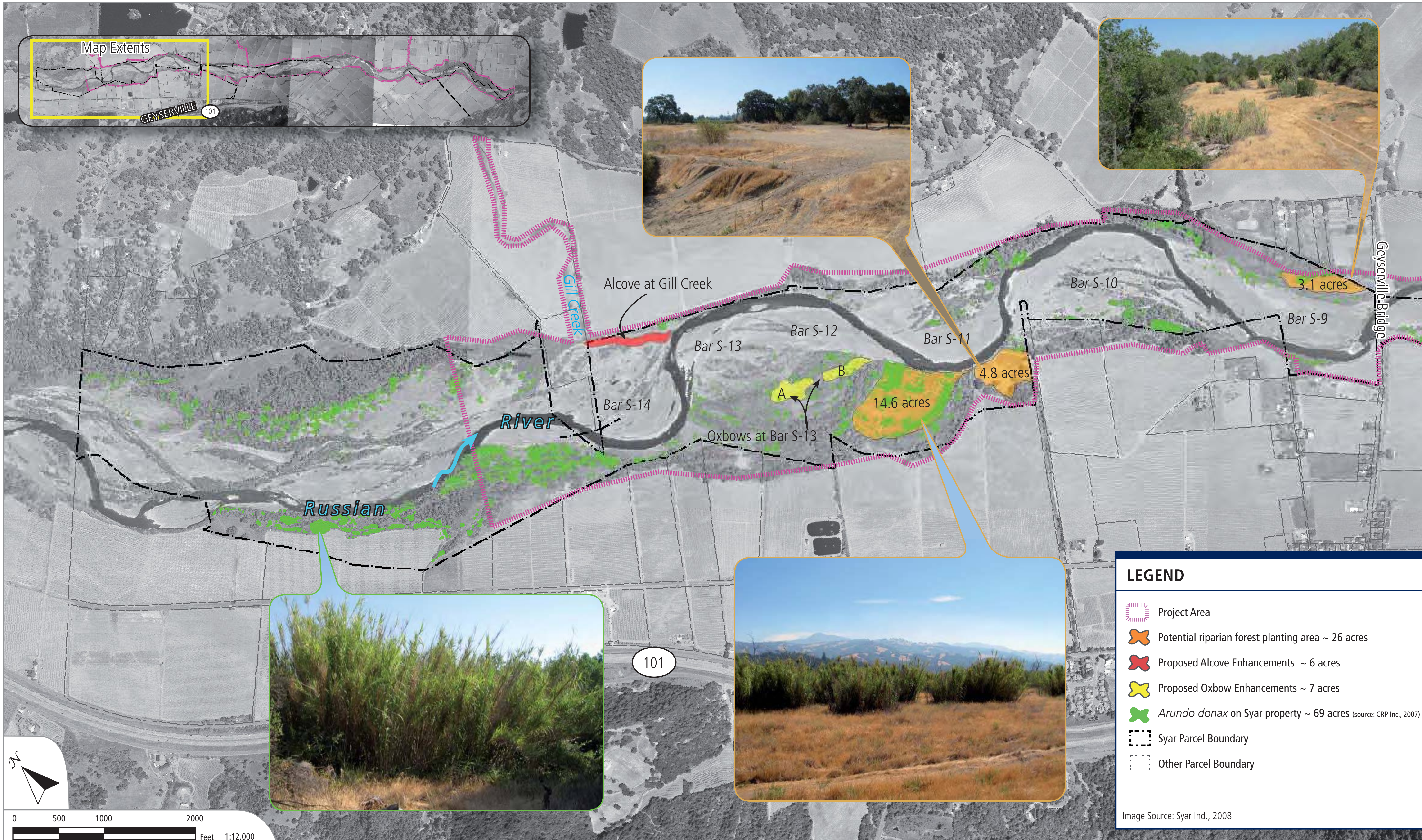
The scope and scale of the REP will be determined by financial resources made available through instream mining and contributions made by other river stakeholders. Syar would contribute materials, construction services, design and support services, and/or fees equal to $0.30 per ton of aggregate material mined from the project reach over the 15-year project term. It is estimated that approximately 350,000 tons of aggregate would be mined annually; hence the annual REP contribution would be $105,000, with a total of $1,575,000 allocated over 15 years. These funds could be used for various aspects of REP project implementation including construction services and materials. Over the 15-year project term Syar estimates that their contribution would be sufficient to fund the following REP projects:

1) The six Syar–proposed enhancement projects (i.e., 3 oxbows and 3 alcoves), and
2) Five acres of riparian forest planting primarily focused on cottonwood forest restoration.

The total area of riparian forest planting associated with the oxbow and alcove projects would be more than 6 acres. Thus, at least 11 acres of riparian forest restoration would be completed by Syar under the proposed REP projects. If the Interagency Group determines that other REP projects are of higher priority than the projects listed above, then the funds/resources that Syar contributes can be allocated accordingly.

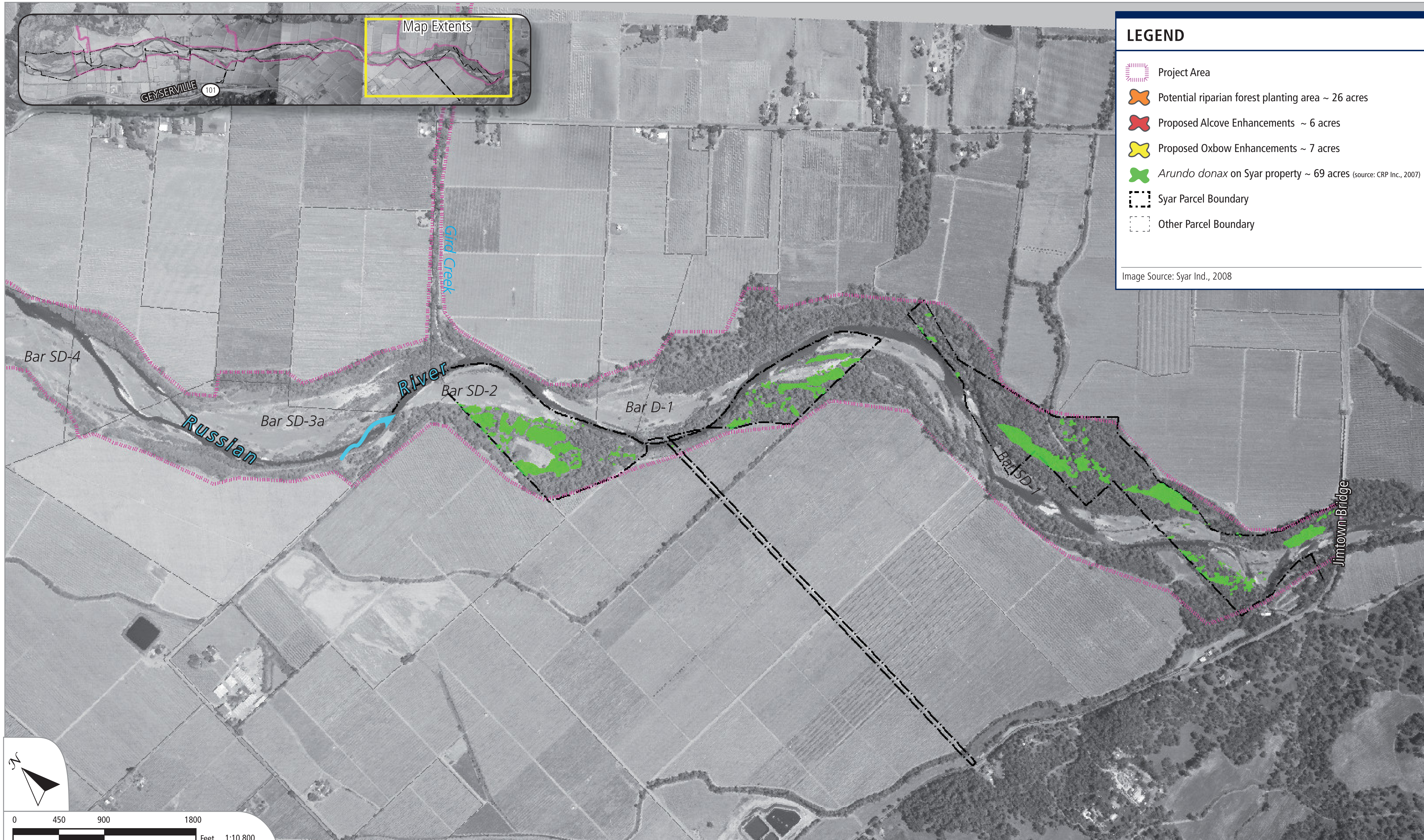
The proposed 15-year use permit for instream mining and the REP would be carried out in the framework of an Adaptive Management Program whereby the location and specific activities would be developed annually in order to address the dynamic nature of year-to-year river conditions and to have the flexibility to meet current river management needs. The annual mining plan and REP project implementation would be developed between Syar, the Sonoma County PRMD, and the Interagency Group, and would consider the river management priorities of stakeholders along the project reach.

Monitoring will be conducted in accordance with the conditions stipulated in the individual permits (e.g., USACE 404 permit, RWQCB 401, CDFG 1600) granted for the mining plan. It is anticipated that all of the permit monitoring conditions will be summarized into a single Monitoring and Reporting Plan to facilitate the execution and communication of the permit requirements. The monitoring plan will likely include measurements of topography, water quality, fisheries and vegetation. Performance criteria will be established for various parameters within each of the monitoring disciplines. The monitoring and reporting will be closely tied to the adaptive management of the REP and the maintenance of projects.



SWANSON HYDROLOGY + GEOMORPHOLOGY
500 Seabright Ave, Suite 202 Santa Cruz, CA 95062
PH 831.427.0288 FX 831.427.0472

FIGURE ES-1a: Map showing project area, potential riparian forest planting areas, proposed alcove and oxbow enhancements, and *Arundo* infestation on Syar property in the upper portion of the project reach.



Swanson Hydrology + Geomorphology
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FIGURE ES-1c: Map showing project area, potential riparian forest planting areas, proposed alcove and oxbow enhancements, and *Arundo* infestation on Syar property in the lower portion of the project reach.

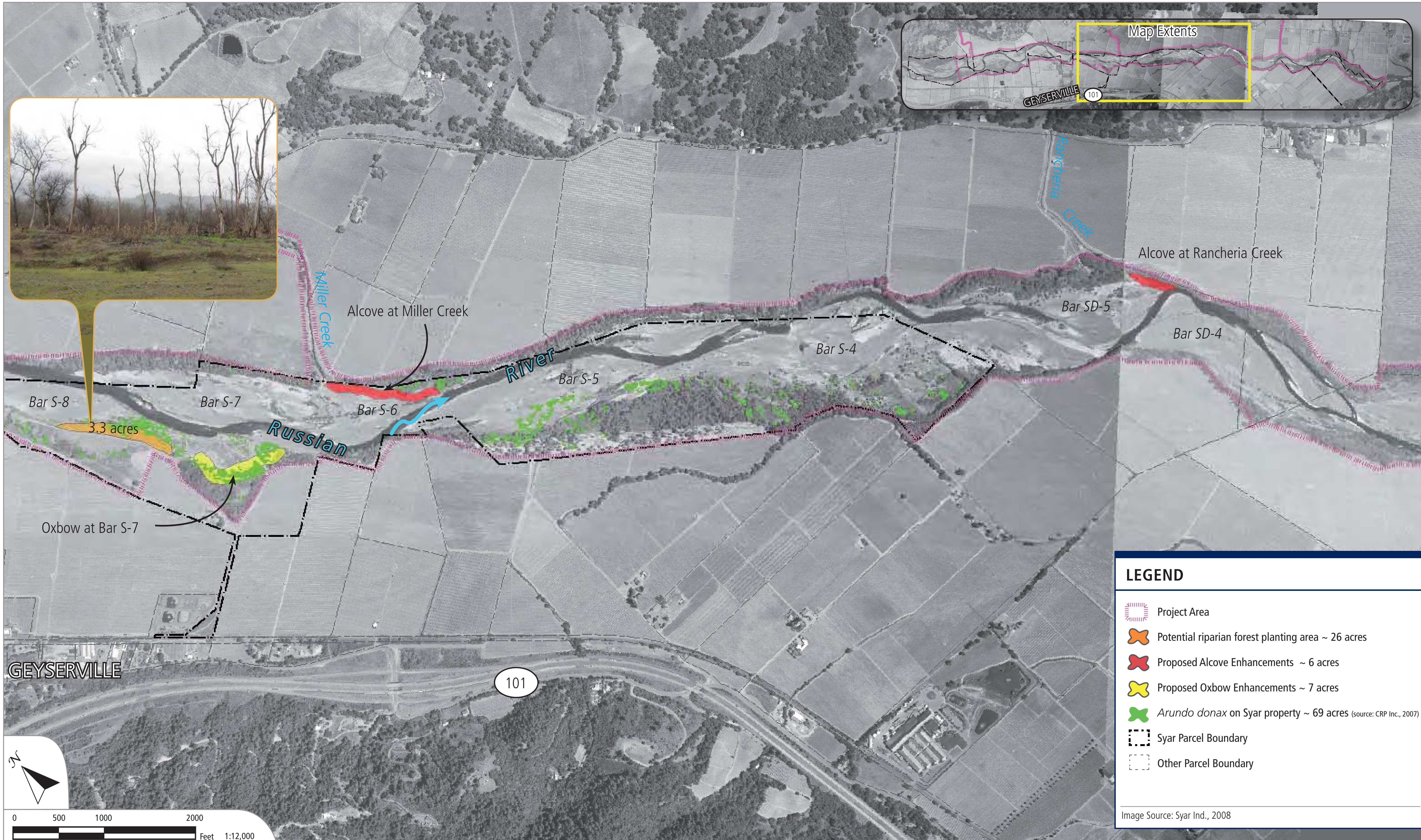

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FIGURE ES-1b: Map showing project area, potential riparian forest planting areas, proposed alcove and oxbow enhancements, and *Arundo* infestation on Syar property in the middle portion of the project reach.

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Appendices

1.0 INTRODUCTION

Syar Industries, Inc. (Syar) proposes to integrate a River Enhancement Program (REP) into an instream gravel mining use permit application for the Russian River in the Alexander Valley between Gill Creek and the Jimtown Bridge **(Figure 1)**. The REP is a set of projects to be carried out by river stakeholders, including Syar, to improve riparian and aquatic habitats through the project reach. The REP was developed by Syar in coordination with an Interagency Group[1] to integrate the river management goals of multiple agencies with instream mining. The river management objectives, as specified by the Sonoma County Aggregate Resource Management Plan (ARM Plan), include reducing erosion, maintaining flood capacity, and expanding the area and quality of aquatic, riparian and wetland habitats. The Interagency Group has participated in the development of REP projects in order to address permitting issues and goals of regulatory agencies.

It is proposed that the REP and the Syar -Alexander Valley instream mining application be combined under one project description for CEQA environmental review and be incorporated under one set of resource agency permits. The construction activities, equipment, access and locations proposed for REP projects are similar to the instream mining plan. REP projects would involve grading, revegetation, invasive species control, placement of large woody debris (LWD), and bioengineered bank protection. These projects would have restricted windows for construction, and incorporate water quality and habitat protection measures that are similar to the proposed instream mining plan.

The proposed 15-year use permit for instream mining and the REP would be carried out in the framework of an Adaptive Management Program (AMP) whereby the location and specific activities would be developed annually in order to address the dynamic nature of year-to-year river conditions and to have the flexibility to meet current river management needs. The annual mining plan and REP project implementation would be developed between Syar, the Sonoma

[1] The interagency review group includes representatives from Sonoma County PRMD, NOAA Fisheries, U.S. Army Corps of Engineers, North Coast Regional Water Quality Control Board and the California Department of Fish and Game.

County Permit Resource Management Department (PRMD), and the Interagency Group, and would consider the river management priorities of stakeholders along the project reach.

Syar has proposed six specific habitat enhancement projects (See Section 2 for detailed descriptions) to be carried out when mining occurs in the vicinity of these project locations. Syar proposes to implement these specific projects over a six year period within the 15-year use permit term. Other qualifying REP projects have been identified and developed conceptually as part of the REP development process (See Section 2 for descriptions of programmatic enhancement projects).

Specific annual mining and enhancement projects would be developed under the proposed AMP (See Section 3 for details of the AMP). Project location(s) and types would be considered annually to help meet specific priorities. For example, where bar skimming may help reduce the severity of streambank erosion in a specific location, Syar could contribute towards a streambank enhancement and protection project at the same location; this type of action would meet the ARM goals of producing commercial aggregate and accomplishing river management objectives of erosion control, and protection and enhancement of riparian habitats.

In order to retain economic viability of the project, Syar's participation in REP projects would be based upon the formulation of projected annual aggregate production and REP project cost valuation. Syar's participation could range from full implementation of specific projects to participation in a portion of a project, which may include contributing materials, construction services, and/or fee contribution. Syar would develop an annual REP project proposal based upon consultation and input from Sonoma County PRMD and the Interagency Group. Syar's annual REP project obligation would be approved on an annual basis through interagency coordination and as part of the annual mining plan review process.

Syar submitted applications in 2006 for a use permit with Sonoma County PRMD and a Clean Water Act 404 permit from the U.S. Army Corps of Engineers (USACE) for multi-year instream mining on 8 bars. The proposed mining plan was designed through consultation with NOAA

Fisheries using NOAA's instream mining guidelines (NOAA Fisheries 2005) and a geomorphic study prepared in 2005 by Swanson Hydrology + Geomorphology (SH+G 2005). The NOAA Fisheries guidelines provided the template for the mining grading plans while the SH+G geomorphology study addressed site-specific geomorphic issues as required for meeting mining standards specified by the Sonoma County ARM Plan.

1.1 CONTEXT FOR INSTREAM MINING AND RIVER MANAGEMENT

This section describes the context for river management in the project reach and the rationale used to develop instream mining and conceptual REP projects.

1.1.1 Background and History

Geomorphic studies have revealed a significant narrowing of the historic Russian River channel in Alexander Valley as a result of channelization and land reclamation since the mid-1800s. This narrowing occurred as a result of the expansion of agricultural lands on the valley floor and at different times has been accomplished through clearing, filling and leveling riparian forests, instream mining, levee construction, channelization and placement of armored banks. These activities reflected an early river management strategies focused on expanding and protecting agricultural land in the floodplain and maintaining bridge crossings by controlling overbank flooding and lateral erosion. Bridges, levees and erosion control structures were purposefully installed to confine and control the lateral movement of the river channel and to some extent, instream gravel mining from the 1940s through the mid-1980s helped to maintain an artificially deep and narrow channel. Riprap and other streambank protection measures were installed over time in many areas to control erosion.

The long-term effect of the channelization from the late 1800s to mid 1980s on river habitat area, complexity and values has been significant. By 1898, photographic evidence shows that nearly the entire valley floor had been converted to agriculture from a prehistoric condition dominated by riparian and wetland features. The reclamation efforts directly converted river habitats to agricultural fields, but also fundamentally affected the physical geomorphic processes of erosion, sediment transport and sediment deposition that created and supported the landforms upon which aquatic and riparian habitats formed. In general, narrowing the river corridor increased hydraulic and erosive force, simplified aquatic habitats and removed large areas of the valley floor from flooding and regeneration of riparian forest and wetlands. It is probable that these changes and changes in the watershed reduced the availability and recruitment of LWD, an important biological and physical component of aquatic habitat.

Historic maps and other information suggest that the channel had incised on the order of 4-8 feet prior to the 1980s in response to the narrowing of the river channel and floodway corridor and greater concentration of erosional force. Channel incision lowered the river bed relative to the valley floor and created high, erodible banks and elevated *terraces* with reduced soil moisture. Regeneration of riparian forest was concurrently reduced with the loss of frequent overbank flooding, fine sediment deposition, lateral channel movement and suitable surfaces for riparian vegetation recruitment. In addition, the noxious weed *Arundo dona*x, which is invades established riparian forest areas, has further degraded native riparian habitats.

The rate of instream mining in the Alexander Valley was greatest between the 1950s and the late 1980s, which had the effect of maintaining an artificially narrow channel. Mining areas and rates were significantly reduced in the mid 1990s as a result of the implementation of the 1994 ARM Plan and concerns amid uncertainty about the impacts of instream mining. Contributing factors to this view were a lack of detailed data needed to determine if mining rates were exceeding sediment replenishment rates and an understanding of geomorphic trends. These factors resulted in policies that reduced the extent and volume of mining at that time.

The assumption that the river is being over-mined today has been reversed as detailed data collection over the past 14 years (1994-2007) has allowed for a distinction between the legacy impacts of historic river reclamation (i.e. effects of late 1800s to 1980s land use changes) and more recent modern instream mining. Monitoring studies conducted by Sonoma County PRMD since mid 1990s show that the river profile grade has remained relatively stable since the initial incision that likely occurred between the late 1940s and late 1970s. Recent analysis conducted by SH+G has shown that since 1994, aggradation or filling of the channel with coarse sediments in the Syar Reach has been on the order of 3.0 million cubic yards (cy) with a relatively modest extraction rate of 1.0 million cy between 1994 and 1997. Since 1994, gravel bars in the project reach have increased in height from 4 to over 14 feet. Increases in lateral erosion have been documented in some areas with concurrent increases in channel width and sinuosity. In some reaches channel flood capacity has been measurably reduced by bar aggradation.

The recent data suggest that the river has a sufficient supply of coarse sediment to retain pools and riffles and to replenish bars after managed bar skimming activities. The recent trends suggest a natural tendency still favoring the wider and shallower pre-historic and pre-reclamation channel, which if left unchecked, could present greater risk of erosion, channel *avulsion* (i.e. abrupt channel expansion and relocation) and flooding on the valley floor to areas under agricultural use. Erosion also threatens some areas of the few remaining mature riparian vegetation stands on high terraces.

1.1.2 Modern Mining Practices (Managed Bar Skimming)

The instream mining plans are carefully designed to meet specific aquatic and riparian habitat protection objectives developed by NOAA fisheries, PRMD and CDFG. These methods have been successfully used, monitored and tested in the Middle Reach during successive bar skimming conducted in 2002 and 2007. The mining extraction areas are designed to retain natural channel geometry and pattern and protect the important hydraulic forces that sustain habitat structure and substrate in the low flow channel riffles, pools and runs. The mining plans leave an existing ground buffer at the head of each bar and along the outside edge in order to maintain confinement and depth for moderate flows to scour and transport coarse sediment (bedload); this ensures that natural geomorphic processes supporting channel stability and aquatic habitats are preserved and that the continuity of bedload transport through the river system is not disrupted. Only in larger floods when coarse sediment and bedload supply and transport rates are high is the mined area replenished.

Bar skimming can help control lateral erosion by reducing hydraulic pressure on erodible streambanks in small and moderate floods by reducing the obstructive area of the bar and tendency of the river to increase its width and degree of meandering. An assessment of bank erosion conducted by SH+G in 2007 and 2008 along historically channelized segments of the Alexander Valley and Middle Reach indicates that erosive pressure on streambanks increases when bars reach heights over 10 feet above mean summer water. Bars higher than 10 feet no longer behave as low “alternate bars”, or those frequently eroded or scoured by overtopping flows; rather they become higher “point bars” that are more characteristic of meandering rivers. Point bars grow laterally and vertically with a higher degree of lateral erosion, greater width and channel movement. A meandering river results in a higher angle of attack on streambanks, and as the channel is often aligned orthogonally to the path of large floods and bedload transport, it may be more susceptible to filling and avulsion than a less sinuous channel; the Russian River as seen on historic maps and aerials had a wide sinuously – braided pattern in the Alexander Valley, suggesting episodic overloading with bedload during large floods and occasional abrupt channel avulsion. Alternate bar channels are more compatible with maintaining a narrower river corridor with less lateral bank erosion and a channel planform more in line with down valley bedload movement in large floods. As a result it is more efficient in bedload transport and less susceptible to avulsion, however where historic channelization has narrowed the channel sediment must be removed to maintain the low alternate bar relief and channel pattern. By reducing meandering, bar skimming reduces threats to agricultural lands and potential loss of mature riparian forest on high terraces.

While a less sinuous river pattern has advantages for protecting land use on valley floor, there are important and significant ecological differences between a wide meandering stream and a narrow, less sinuous channel. A meandering stream tends to create a wider area for erosion and sediment deposition allowing for development of larger tracts of riparian woodland, which are often recruited and incorporated as LWD in aquatic habitats as the river channel meanders and erodes abandoned terraces. Point bar evolution and meandering often creates a diverse riparian forest structure with multiple heights, species and age classes. In terms of aquatic habitat, meandering channels are usually more diverse by nature as flow paths support divergent angles of attack on streambanks creating channel boundary irregularities with complex localized hydraulic effects that result in deep pools, eddies and helical flows through bends.

A narrower alternate bar channel with less meandering tends to be less diverse, simpler in its geometry and form, and more static in terms of lateral movement. However, diverse hydraulics and habitats can form in an alternate bar channel with adequate floodway width, which allows for both areas of concentrated scour and slackwater and a degree of meandering; this is evidenced by generally good habitat conditions in the narrow reaches of the Russian River. However, there is less interaction with the floodplain riparian forest and less LWD in aquatic habitats unless there is transport from upstream reaches.

In summary, bar skimming helps meet the objectives of controlling lateral erosion and channel flood capacity, however maintaining a narrow river corridor can reduce habitat quality to some degree. The river enhancement projects described below are designed to help offset some of the legacy effects of reclamation, straightening and channelization and go beyond protection and mitigation measures normally incorporated into instream mining plans.

1.2 RESTORATION AND ENHANCEMENT PLAN OBJECTIVES

The REP presents specific measures to meet river management objectives of the ARM Plan and of multiple agencies. These measures, based upon the current form and geomorphic behavior of the Russian River, seek to restore active processes supporting aquatic and riparian habitats. The REP seeks to optimize environmental and economic benefits of instream mining activity, to sustain a narrow river corridor, but also restore natural areas and recover natural processes that sustain habitat. The REP reflects the river management objectives as outlined in **Table 1**.

To reflect the river management goals, an ideal instream mining plan would control the evolution of bars without negatively affecting the gravel supply needed to support ecological function, nor remove the hydraulic elements of important geomorphic processes and channel geometry that create and retain habitat. As bar skimming influences the elevation of bars, and to a great extent their behavior, it can be useful as a river management tool to control lateral erosion, floodway width and channel flood capacity. The Russian River in the Alexander Valley has retained some good morphological characteristics in terms of pool and riffle morphology despite a long history of modifications. However, in its current state it is well below its ecological potential as it is lacking riparian vegetation, woody cover, diversity along shorelines and elements such as LWD that enhance pool scour, create cover and hydraulic diversity. The REP seeks to create enhancements that restore these elements.

Table 1. River management objectives and relation to instream mining and enhancement projects.

Agency	Policy	Project Element	Locations in Project Area
Sonoma County PRMD	ARM Plan: Erosion control, Flood Capacity	Instream mining reduces point bar formation and modulates channel aggradation	On project bars
	Riparian habitat objectives	Oxbows and riparian plantings	Oxbows near Bars S-8 and S-13; riparian plantings near mining areas.
NOAA Fisheries	Instream Mining Guidelines Avoid short term impacts and promote long term recovery of salmonid populations Tributary Enhancement Plan (NOAA, 2007)	Retain and enhance instream aquatic habitat for salmonids on Mainstem RR and tributaries; streambank benching, shoreline and low bench riparian plantings; placements of large woody debris/log jams; construction and enhancement of alcoves.	Enhancements areas involving riparian plantings and placement of LWD and shoreline elements at locations throughout Syar project reach; alcoves at mouths of Miller, Gird and Gill Creeks;
North Coast Regional Water Quality Control Board	Waste discharge control; Excessive sediment control plan/TMDL	Reduction of fine sediment supplies through bar skimming to reduce bank erosion;	Instream mining removes sand and silt from active channel and reduces lateral bank erosion caused by aggraded bars.
California Department of Fish and Game	Aquatic and riparian habitat protection and expansion.	Benching, riparian plantings, protection of mature riparian vegetation through bank protection and bar skimming and placement of instream structures.	Locations for riparian plantings, erosion control and instream elements throughout project reach.

2.0 RIVER ENHANCEMENTS

2.1 OVERVIEW

Four principle REP elements were identified by Syar, PRMD and the Interagency Group to guide specific project development:

1) **Riparian Forest Planting:** seeks to convert fallow or degraded areas along the river corridor to healthy riparian forest. Revegetation efforts would focus on planting riparian scrub, cottonwood forest and mixed riparian forest communities. Most of the areas suitable for planting are former floodplain surfaces now elevated above annual flooding; these project may involves lowering the surfaces by excavation to restore floodplain function and desirable hydrologic conditions.

2) **Arundo Removal:** This enhancement element would remove *Arundo* within existing riparian forest and in monoculture stands. Eradication methods may include mechanical removal, herbicide treatments and excavation during construction of habitat enhancement features.

3) **Aquatic Habitat Enhancement/Large Woody Debris Placements:** diversify and expand aquatic habitats for juvenile salmonid rearing and adult migration by excavating of secondary channels in backwater areas, placing LWD and vegetation plantings to improve cover and geomorphic function (e.g., pool formation via scour).

4) **Bank Stabilization/Revegetation:** seeks to reduce lateral erosion by enhancing bank stability through grading, revegetation, and/or placement of LWD, rock groins and revetments. All of the proposed treatments emphasize a bioengineering approach by combining live woody vegetation with LWD and large rock.

The river enhancement projects presented in this section are designated as “construction projects” under PRMD permitting regulations and are incorporated as such within the instream mining use permit. Recognizing that river conditions change year-to-year and priorities for river management may shift accordingly, the selection of the location and design for each year’s enhancement project would be developed under the AMP. The AMP would be led and coordinated by PRMD and Syar and involve the Interagency Group, local landowners, the Salmon Coalition and others stakeholders to gather input on river management priorities. Prior to each construction season, Syar will present the results of annual river monitoring data collection, the upcoming year's proposed mining plan and enhancement project (combined hereafter called "Annual Plan"). The draft Annual Plan will be refined and finalized prior to the mining season based upon inputs and consultation from PRMD, the Interagency Group and relevant stakeholders. It is anticipated that this AMP process would simultaneously and concurrently address all regulatory issues of each agency (PRMD, U.S. Army Corps of Engineers, California Department of Fish and Game, NOAA Fisheries and Regional Water Quality Control Board).

2.1.1 River Enhancement Projects: Syar Projects and Programmatic Projects

The enhancement elements discussed above have been incorporated into a set of potential REP projects. The REP projects fall into two categories:

1) **Syar-proposed enhancement projects:** Six specific projects have been designed at specific locations and are ready to be implemented as part of nearby bar skimming and mining projects; and
2) **Programmatic Enhancement Projects:** These projects are presented in conceptual renditions at potential locations. Specific plans would be developed on a year-to-year basis using the most current information and with priority given to projects that address the most immediate river management needs. Detailed designs would be completed as part of the Annual Plan.

This section describes the overall nature and extent of these projects and can be used to evaluate potential impacts (both positive and negative) for CEQA environmental review and multi-agency permitting. Enhancement activities would occur within the banks of the mainstem river corridor and/or the lower reaches (from the mainstem to River Road) of three tributaries: Gill, Miller, and Rancheria Creeks. The REP project area along the mainstem river corridor and designated tributaries is approximately 1,130 acres. **Figures ES-1a through ES-1c** provide an overview of the project area and locations of potential REP projects.

2.1.2 Revegetation Methods Common to All Projects

Revegetation is a key component for all enhancement projects described below. This section introduces the concepts for riparian forest enhancements which are applicable to the Syar-proposed and programmatic enhancement projects.

Land use practices and changes in river processes have created gaps in the continuity of riparian habitat along the project reach and limited the capacity of the ecosystem to naturally recruit and regenerate riparian vegetation. Thus, PRMD and the Interagency Group have identified revegetation as a priority enhancement activity that would expand the riparian vegetation communities that provide wildlife habitat, bank stability and eventually in-channel aquatic habitat via the supply LWD.

The riparian habitats that occur along the project reach essentially follow a toposequence in their spatial distribution. The lowest elevation community is *riparian scrub*, which occurs at elevations approximating OHW. The riparian scrub community transitions to *cottonwood forest*, which generally occurs on low terrace/floodplain bench formations; *mixed riparian forest*, which includes species such as valley oak (*Quercus lobata*) and coast live oak (*Q. agrifolia*), occurs on high terraces where remnant riparian communities are present, but limited in their spatial extent due to encroachment of agricultural land use. The objective of the REP is to use various revegetation techniques that would create these self-sustaining vegetation communities in presently degraded areas. These actions would increase the acreage of riparian habitat, while improving habitat continuity and bank stability.

All of the enhancement projects (Syar-proposed or programmatic) would incorporate a common revegetation planting palette which is shown in **Table 2**. This planting palette would be adapted to site specific conditions, as needed. The revegetation plans for each of the target plant communities are described in the following sections.

	Plant Community	River Feature/ Elevation Range	Botanical name	Common Name	Propogation Method	Size	Spacing	Growth Form	Planting Group	Percent of Group	Quantity per Acre
Cuttings and Container Plants	Riparian Scrub	Lower portions of oxbows/ alcoves (OHW +/- 2ft)	Alnus rhombifolia	white alder	Cuttings	4 to 8 ft length, 2 to 8-inch diameter	Average 10 ft O.C., in topographically higher portions of planting zone	tree	A	25%	109
			Populus fremontii	Fremont cottonwood						75%	327
			Baccharis salicifolia	mule fat	Cuttings	3 to 5 ft length, 0.75 to 2-inch diameter	Average 4 ft O.C.	shrub	B	25%	681
			Salix spp.	willow species				tree/shrub		75%	2042
	Cottonwood Forest	Lower terrace/ oxbows/ alcoves (OHW +2 to 10 ft)	Populus fremontii	Fremont cottonwood	Cuttings	4 to 8 ft length, 2 to 8-inch diameter	Average 8 ft O.C., in topographically lower portions of planting zone	tree	A	60%	408
			Salix spp.	willow species		3 to 5 ft length, 0.75 to 2-inch diameter		tree/shrub		40%	272
			Acer macrophyllum	bigleaf maple	Container	T6 or 5 Gal	Average 12 ft O.C., in topographically higher portions of planting zone	tree	B	20%	61
			Aesculus californica	California buckeye	Container	T6 or 5 Gal		tree		15%	45
			Populus fremontii	Fremont cottonwood	Container	T6 or 5 Gal		tree		50%	151
			Quercus lobata	valley oak	Container	T6 or 5 Gal		tree		15%	45
			Rosa californica	California rose	Container	1 Gal	Average 8 ft O.C.	shrub	C	50%	340
			Symphoricarpos albus	snowberry	Container	1 Gal		shrub		50%	340
	Mixed Riparian Forest	High terrace	Acer negundo	boxelder	Container	T6 or 5 Gal	Average 12 ft O.C.	tree	A	10%	30
			Fraxinus latifolia	Oregon ash	Container	T6 or 5 Gal		tree		10%	30
			Juglans californica	black walnut	Container	T6 or 5 Gal		tree		20%	61
			Populus fremontii	Fremont cottonwood	Container	T6 or 5 Gal		tree		10%	30
			Quercus agrifolia	coast live oak	Container	T6 or 5 Gal		tree		20%	61
			Quercus lobata	valley oak	Container	T6 or 5 Gal		tree		30%	91
			Baccharis pilularis	coyote brush	Container	1 Gal	Average 8 ft O.C.	shrub	B	25%	170
			Heteromeles arbutifolia	toyon	Container	1 Gal		shrub		25%	170
			Rhamnus californicus	coffeeberry	Container	1 Gal		shrub		25%	170
			Rosa californica	California rose	Container	1 Gal		shrub		25%	170

	Plant Community	Botanical name	Common Name	Method	lbs/acre	Spacing	Growth Form
Seed Mixes	Riparian Scrub and Cottowood Forest	Achillea millefolium	yarrow	Broadcast seed	2	NA	forb
		Agrostis exarata	spike bentgrass	Broadcast seed	8		grass
		Artemisia douglasiana	mugwort	Broadcast seed	4		forb
		Baccharis salicifolia	mule fat	Broadcast seed	4		shrub
		Deschampsia cespitosa	tufted hairgrass	Broadcast seed	8		grass
		Hordeum brachyantherum	California barley	Broadcast seed	8		grass
		Leymus triticoides	creeping wild rye	Broadcast seed	8		grass
	Mixed Riparian Forest	Artemisia douglasiana	mugwort	Broadcast seed	4	NA	forb
		Bromus carinatus	California brome	Broadcast seed	8		grass
		Collinsia heterophylla	Chinese houses	Broadcast seed	2		forb
		Elymus glaucus	blue wildrye	Broadcast seed	8		grass
		Eschscholzia californica	California poppy	Broadcast seed	2		forb
		Festuca idahoensis	Idaho fescue	Broadcast seed	8		grass
		Nassella pulchra	Purple needle-grass	Broadcast seed	8		grass
		Poa secunda	one sided blue grass	Broadcast seed	8		grass
		Vulpia microstachys	vulpia	Broadcast seed	8		grass

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TABLE 2: Revegetation Planting Palette for River Enhancement Projects.

Riparian Scrub

This is an early seral, willow-dominated plant community that is both resilient and dynamic because it is frequently subject to disturbance from streamflow, scour and debris. **Table 2** shows vegetation species that would be included in the riparian scrub community. Revegetation of this plant community would rely primarily on the use of woody cuttings of willow (*Salix* spp.), mulefat (*Baccharis salicifolia*), white alder (*Alnus rhombifolia*), and cottonwood (*Populus fremontii*). Mulefat and willow species (primarily *Salix exigua*) would be planted in the lower portions, while cottonwood and alder cuttings would be planted in topographically higher portions of the riparian scrub community. Woody pole cuttings and bundles (fascines) would be planted into substrate with the use of mechanical augers. Container plants (nursery stock) are not recommended for planting at elevations approximating OHW because they are prone to scour and erosion before they can become established.

The riparian scrub community could also be seeded with a mix of grasses and forbs **(Table 2)** in areas where there is sufficient fine material or topsoil to support herbaceous vegetation. It should be noted that establishment of plants from seed in this vegetation community is often not effective because the river may erode the seedlings before they can become well-established. However, it is worth the effort of applying seed because some of the created areas would be in protected slackwater areas and in some years plants may become established prior to the onset of large flow events.

In general, this community would be planted along oxbows and alcoves, in the lower portion of the streambank enhancement features, and in portions of the river with existing low terrace features were *Arundo* would be removed and replanted with native vegetation.

Cottonwood Forest

In the project reach, cottonwood forest typically occurs on low terraces, high portions of large gravel bars, and along abandoned channels or oxbows. Like the willow scrub community, cottonwoods are adapted to the disturbance regime of frequent flooding, scour and deposition, but their ability to recruit and regenerate in the project reach is compromised by the lack of suitable floodplain surfaces, high bank erosion rates and encroachment of agricultural land use.

Table 2 shows that plant species that would be included in the cottonwood forest community. Like the willow scrub, revegetation of this plant community would rely heavily on the use of woody cuttings, but some container plants could also be used. Cottonwood cuttings would be planted in various sizes; it is recommended that the planting of large pole cuttings (4 to 8-inch diameter) in deep conical holes be tested. This revegetation technique has been quite successful in establishing cottonwoods along the Carmel River, which has a similar moisture regime and substrate characteristics to the project reach. The cottonwood forest community would also be seeded with a mix of grasses and forbs **(Table 2)**, which should have a higher rate of establishment from seed than the riparian scrub community because scour and erosion are not as prevalent in these planting areas. Establishment of vegetation from seed will be largely dependent on the timing and magnitude of early winter storm events in the first year after seeding. If feasible, seeded areas would be irrigated for several weeks or months in the summer or fall to establish vegetation prior to the onset of the winter runoff events.

In general, this community would be planted along created oxbows and alcoves, in the upper portion of the streambank enhancement features, and in portions of the river with existing low terrace features were *Arundo* would be removed and replanted with native vegetation. It should be recognized that riparian scrub and cottonwood forest communities occupy similar geomorphic features, and their distribution may vary in elevation by only a few vertical feet; thus the appropriate planting area for each community would be determined on a site-specific basis.

Mixed Riparian Forest

In the project reach, mixed riparian forest typically occurs on high terraces (i.e., the valley floor adjacent to the river). This community generally occurs in areas that are not subject to frequent flooding, but experience periodic inundation of moderate duration (on the order of a 10-year flood event). The spatial distribution of this community in the project reach is compromised by the high bank erosion rates and encroachment of agricultural land use.

Table 2 shows that plant species that would be included in the mixed riparian forest plant palette. Establishment of this plant community would primarily be accomplished by planting container plants. The mixed riparian forest community would be seeded with native grasses and forbs that are typically associated with mesic or upland habitats (**Table 2**). The successful establishment and persistence of native herbaceous species is highly dependent on the pre-treatment of the revegetation area, seeding techniques, seed quality and maintenance. Since many sites along the project reach have variable characteristics (e.g., soil, invasive species, hydrology, etc.) revegetation plans would be developed on a case-by-case basis to determine the most appropriate techniques.

Plant Establishment and Maintenance

Temporary irrigation would be used to aid in the establishment of the revegetation projects. The type of irrigation system used would depend primarily on the vegetation community and proximity to a water source. Revegetation projects would be irrigated immediately after plant installation (typically in late summer or early fall) until rainfall/streamflow provides sufficient moisture to sustain the plants through the winter/spring. Irrigating prior to the onset of the wet season will stimulate seed germination and establishment prior to the onset of heavy rains and subsequent high flow events.

The riparian scrub and cottonwood forest communities would be watered with temporary aboveground overhead irrigation lines or a water truck, depending on proximity to an available water source. The duration of irrigation for riparian scrub and cottonwood forest communities would be evaluated on a case-by-case basis, but would typically be 1 to 3 years. The mixed riparian forest community would be irrigated with a drip system if the plantings are located near a water supply that can serve the system, or hand watered if there is no available source; this community would typically be watered for 3 to 5 years to aid in plant establishment.

Revegetation maintenance would include invasive species control, repair of plant basins and treatment of pests or disease. Invasive species control would typically include manual or mechanical removal of undesirable species, and herbicides may be used to "spot spray" difficult to control species (e.g., *Arundo*, thistles). Only herbicides approved for use in aquatic environments would be used. Plant basins would be maintained and repaired if damaged. Trees would be inspected for the presence of pest and disease, and treated if necessary.

2.2 SYAR-PROPOSED ENHANCEMENT PROJECTS

These river enhancement projects are the six specific projects developed by Syar and include the creation of alcoves and oxbows. These projects would be implemented in conjunction with nearby bar skimming operations. **Figure 2** provides an overview showing the locations of these projects along the river and detailed descriptions are provided below. These projects would be updated and designed in detail in the months prior to implementation.

2.2.1 Oxbows

Oxbows are excavated areas along the river corridor designed to promote floodplain connectivity and recruitment of native riparian vegetation. Oxbow construction involves excavating a swale within alluvial material at or near the margins of the active channel. The invert elevation or thalweg of the oxbows are designed to be close to the summer low flow water surface elevation (i.e., within 3 feet) where it would sustain high moisture availability, and receive frequent wintertime inundation and fine sediment deposition. The oxbow finished grade elevations would transition from the low summer flow to the mean annual flood stage (i.e., between 3 to 5 feet above summer low flow). This design would create conditions favorable for recruitment and establishment of riparian scrub, cottonwood forest and other and wetland vegetation communities. Oxbows would be particularly useful as a habitat enhancement measure during drought periods when riparian vegetation recruitment is limited.

Figures 2a and 2b show the proposed locations and layouts of the oxbow projects; two would be constructed adjacent to Bar S-13, and one on the west bank opposite Bar S-7. The oxbow sites have been chosen to achieve moderate to high hydrologic connectivity with the river, avoid existing native riparian vegetation, and remove stands of *Arundo.*

Construction of oxbows would require clearing and grubbing, excavation and hauling of floodplain/terrace materials, and revegetation. **Table 3** summarizes the area and excavation volumes for each of the oxbow projects.

Table 3. Surface area and excavation volumes for oxbow enhancement projects

Location	Surface Area (acres)	Excavation (cy)	
		Above OHW	Below OHW
Bar S-13, Oxbow A	1.4	6,000	1,400
Bar S-13, Oxbow B	1.9	10,150	650
Bar S-7	3.7	41,000	5,800

Construction would occur between June 1 and November1 prior to, during and/or after nearby instream mining is completed. Access for construction equipment, hauling and supplies would generally be along the same roads used for the mining operations. All details regarding placement, operation and removal of haul roads will be addressed in the Annual Plan and instream mining project description.

Construction equipment for enhancement projects would generally be the same as that used for mining, including suitable earth-moving equipment (SEME) (e.g., excavators, self-loading scrapers, loaders) and haul trucks. The oxbow construction process would begin with clearing and grubbing operations. If this involves significant stands of *Arundo*, it may be advantageous to conduct a shredding operation first in order to reduce the mass of materials (shredding arundo eliminates the regenerative properties of the stems and reduces the risk of re-sprouting). Root masses of *Arundo* and excess vegetation would be excavated and hauled to proper disposal sites. Large woody debris and live plant materials would be salvaged and stored for habitat enhancement, revegetation and mulching activities.

Once vegetation is cleared to the soil surface, excavation and temporary stockpiling of topsoil would begin using a self-loading scraper. The scraper would pick up topsoil material, transport and unload it in an adjacent temporary stockpile for later use. Water trucks would be used to provide dust control in the excavation and temporary stockpile areas. After the topsoil is removed and stored, excavation operations would begin using SEME. The subsurface materials are anticipated to be coarse sand and gravel mixed with silt and clay. This material would be excavated, loaded into haul trucks and removed from the site. The excavation process would continue to the point where backfill placement of topsoil would result in the target finished grades. Once this elevation is reached, self-loading scrapers would replace topsoil and lightly compact it.

Large woody debris, as available, would be placed throughout the created oxbows. The LWD would be anchored by embedding the logs into the substrate. The oxbow areas would be revegetated using the species and methods shown on **Table 2**. However, because it is anticipated that the oxbows substrate will be comprised primarily of coarse material (i.e., gravel), they will only be seed in areas were there is sufficient fines and/or topsoil to support herbaceous vegetation. It is anticipated that significant natural recruitment of vegetation will occur in the oxbows. The oxbows may be used as transplant locations for vegetation salvaged from skimmed bars.

Oxbow elevations are designed to be low enough so that seedling roots can access the summer groundwater table and not require long-term irrigation, however in some locations temporary irrigation by water truck or overhead systems would be required until the onset of the wet season. Drip irrigation is not likely to be used due the high potential for flood damage. The overall goal is for the vegetation to be self-sufficient within one year after planting.

The grading plan for the oxbows would limit disturbance to existing significant native trees (e.g., cottonwoods), to the extent feasible. In no case would excavation occur in the Russian River channel or cause erosion into the live stream. Temporary erosion control measures would be installed prior to the rainy season (October 15) and may include gravel berms, coir logs, drainage control structures, and installation of barriers and signage to keep trespassers and OHV from entering.

2.2.2 Alcoves

Alcoves mimic natural landforms that are created by erosion against a resistant bank at the downstream end of gravel bars. They are important habitat features for salmonids as they provide: (1) velocity refuge during moderate to high river flows in winter, (2) cool water thermal refuge during the summer season, and (3) where situated near the mouths of tributary streams, holding areas for adult fish migrating to access tributary spawning areas. **Photos 1 and 2** show a natural alcove.

Figures 2c through 2e show the proposed alcove locations in the project reach. A constructed alcove is proposed at the mouth of each of the eastern tributaries in the project reach (i.e., Gill, Miller and Rancheria Creeks). Constructing alcoves would require access for excavation equipment along the margins of the low flow channel, and excavation of a naturalistic streambed from elevations below summer low water at the edge of the Russian River low flow channel to the mouth of the tributary stream. **Table 4** summarizes the area and excavation volumes for each of the alcove projects.

Table 4. Surface area and excavation volumes for alcove enhancement projects

Location	Surface Area (ft^2)	Excavation (cy)	
		Above OHW	Below OHW
Gill Creek	2.0	1,700	13,700
Miller Creek	2.7	9,000	12,900
Rancheria Creek	1.1	0	9,400

Excavation of the alcove would be performed from the adjacent gravel bars using SEME including self-loading scrapers, excavators, loaders and haul trucks. Materials generated during excavation of the alcoves would be hauled off-site or temporarily stored for future use in enhancement projects.

In order to segregate the construction work area from the low flow river channel and minimize discharge of fine sediment, an approximately 100-foot long by 25-foot wide "plug" of bank material would be retained at the mouth of the alcove while most of the excavation proceeds **(Figures 2c through 2e)**. The plug would separate the work area from the live stream until all excavation of the alcove had been completed and suspended sediments in ponded water within the exaction area have settled. The initial excavation would use loaders and scrapers working within a 25-foot buffer area away from the low flow river channel. Once excavation encounters groundwater in the alcove (likely at or near the elevation of low flow water surface in the river), an excavator would be used to dredge material and place it in a dewatering area. The dewatering area would contain the dredged materials and allow them to dry before loading into haul trucks. If dredged materials are coarse and not holding significant quantities of water or fine sediments, then they would be loaded directly into haul trucks. The dewatering and staging areas will have erosion control BMPs to prevent discharge of fine sediments offsite, into a live stream or adjacent drainages.

The final step in the alcove excavation would involve removing the plug separating the work area from the live flow of the Russian River, thereby allowing the alcove to connect to the low flow channel. After all suspended sediments in the alcove excavation area have settled an excavator would be positioned along the edge of the shoreline plug and reach across the backside of the plug and work towards the mouth of the alcove, pulling material towards land and away from the live stream. As the excavation commences, eventually the excavator bucket will impinge below the low flow water surface elevation of the river and, despite the effort to still pull material up and away from the shoreline, some increase in turbidity may occur. This will be short-lived as it is anticipate that it will take less than 2 days to completely remove the plug and less than 1 day to remove the material below the low flow water surface elevation where mixing is possible.

Sideslopes along the alcoves would be graded to a maximum 2:1 slope, while the finished grade on slopes at or near the upper end would be 10:1. Alcove depth would approximate the thalweg elevation of the Russian River at the alcove mouth, and gradually increase to existing grades near the mouth of the tributary **(Figures 2c through 2e)**.

The alcoves would be revegetated woody cuttings of mulefat, willow and cottonwoods **(Table 2, Figure 2f)**. No seed or container plants would be used because the alcoves will be subject to frequent inundation/scour and the substrate is likely to be predominately coarse material that is not likely to support herbaceous vegetation. Large woody debris would be placed in the alcove during finished grading. The configuration of the alcove and construction access would be established in areas that minimize disturbance to existing riparian habitat, typically from the adjacent gravel bar mining location through the unvegetated portion of the 25-foot buffer area.

The alcove enhancements would be constructed in the summer or early fall. Dewatering is not expected to be necessary as the plug will block fish entry and stranding. Where existing alcoves are to be enhanced, fish would be removed and relocated to suitable areas prior to construction (See Section 2.4, Avoidance and Minimization Measures).

2.3 PROGRAMATIC ENHANCEMENT PROJECTS

2.3.1 Background

The programmatic enhancement projects have been developed to a conceptual level at example sites throughout the project reach. These include locations where there are gaps in the riparian corridor, where bank erosion is ongoing and/or severe, or where shoreline conditions are degraded from an aquatic and riparian habitat perspective. Specific project locations and types would be developed during adaptive management planning as discussed in Section 3.

2.3.2 Riparian Forest Planting

As discussed in Section 2.1.2, land use practices and changes in river processes have created gaps in the continuity of riparian forest along the project reach. Planting of riparian trees and shrubs along the river corridor would expand the riparian forest communities that provide wildlife habitat and bank stability. In June 2008, SH+G identified land owned by Syar in the project reach where riparian vegetation communities could be restored. The potential areas for riparian forest planting are shown on **Figures ES-1a and ES-1b.** Approximately 26 acres of land were identified that would be suitable for restoration of one our more of the plant communities discussed in Section 2.1.2.

Riparian forest planting projects could require a range of earthmoving, land treatment and revegetation activities. Some areas may be suitable for direct planting, whereas others may need grading, burning, tilling, soil amendments or invasive species control prior to installation of plant materials. Grading or benching terrace areas may be useful to create hydrologic conditions that favor riparian species. In areas that are graded, topsoil would be salvaged, stockpiled then reapplied as part of the site preparation. A temporary irrigation system would be installed to aid in the establishment of the native plants as discussed in Section 2.1.2.

All of the areas shown on **Figures ES-1a and ES-1b** have adequate vehicle access and potential sources of irrigation water. In some areas, pumping water from the river may be the most efficient source of irrigation water. If water is pumped from the river for irrigation, the system would need to meet the criteria established by the County and resource agencies.

2.3.3 Streambank Enhancements

In March 2008, SH+G conducted a reconnaissance-level survey of bank erosion in the project reach and identified areas for potential riparian and aquatic enhancements **(Figure 3).** The rating for severity of erosion (low, moderate, or high) was based on factors such as bank height, bank angle, percent protected by vegetation and composition. **Appendix A** provides photographs and descriptions of the most severely eroding banks. River enhancement concepts were developed based on observations of the geomorphic, hydrologic and ecological setting of the river.

Figure 4 provides a typical layout of streambank enhancements enhancement projects. Several concepts have been developed to enhance shoreline riparian and aquatic habitats while reducing erosion rates on streambanks in the project reach. These enhancement measures focus on:

- creating low benches by excavation to support woody riparian vegetation;
- reducing lateral erosion and stabilizing shorelines and low benches to allow for the establishment of multi-age class riparian vegetation communities; and

- allowing for placement or recruitment of large woody debris elements along shorelines (concentrations of logs with root wads attached partially submerged in low water channel).

Streambanks incorporating these features would serve to reduce erosion, and enhance fish and wildlife habitat over existing conditions (See **Appendix A**). All of the bank enhancement options incorporate common elements of revegetation, which are described in Section 2.1.2 and shown in **Table 2**. Public safety, with respect to the design of the bank enhancement and its potential to impact recreational uses, would be addressed in the detailed design process.

Option 1: Benching

The benching option would excavate selected steep, eroding streambanks and a portion of the adjacent terrace to reduce bank failure mass and create topographically low surfaces that would support desirable riparian vegetation such as white alder, willow, mulefat and cottonwood. **Figure 4a** shows a conceptual drawing of the benching option. **Photos 3 and 4** show riparian benches along the river that are representative of this enhancement concept.

The bench surface would be set at an average elevation that approximates OHW (i.e., 3 to 5 feet above mean summer low flow). The elevation and width of the bench would vary along the length of the bank to promote diversity and resilience of vegetation communities. The entire bank (i.e., above and below the bench) would be revegetated with native species that are discussed in Section 2.1.2 and shown in **Table 2**. LWD would be placed on the bench to enhance physical and biological aspects of near bank fish habitat. By increasing the complexity of the near bank hydraulics and sediment dynamics (i.e., induce local scour and deposition). The LWD would be embedded in the bank (preferred) or anchored to the bench with the use of vertical pilings, large rock and/or cables.

Option 2: Barbs and Embayments

This option includes all aspects of the benching option, but adds hardened points called “barbs” constructed of LWD, large rock or both. Barbs dissipate hydraulic forces and redirect the high velocities away from the bank. The embayment section is a cove with a bench that is protected by the upstream barb. **Figure 4b** shows a conceptual drawing of this option. **Photos 5 and 6** show a barb and embayment section along the Middle Reach that is representative of this enhancement concept.

The barbs would be placed approximately every 100 to 150 feet to deflect flow through the subject bank reach. The barbs would be constructed of LWD or large rock and would extend from the toe of the bank to approximately 5 feet above OHW. If the barbs are constructed of large rock, then LWD would be embedded into the barbs. The embayment would include riparian plantings and LWD, as supply allows, similar to benching option.

Option 3: Groins and Embayments

This option is similar to Option 2, but uses groins that extend from the bank into the channel as a more aggressive means of redirecting hydraulic force away from the bank. The groins are expected to encourage deposition of sediment along the bank. Groins have been used for this purpose on many large rivers and are especially effective along wide-radius bends (Saldi-Caromile et al., 2004) such as occurs in the project reach. **Figure 4c** shows a conceptual drawing of the benching option.

The groins would be placed at irregular intervals approximately every 75 to 150 feet along the eroding bank and constructed of LWD or large rock. The groins would be oriented in the downstream direction at an angle of approximately 70 degrees to bank (per Cramer et al. 2003). Groins pointed in the upstream direction may also be tested as this orientation is most likely to induce maximum scour in the streambed and create desirable deep pool habitat. The groins would extend approximately 10 to 25 feet into the channel and be constructed to an elevation slightly above OHW. Preferably the groins would be constructed of LWD ballasted by boulders. If the groins are constructed of large rock, then LWD would be embedded into the groins, as supply allows. The downstream portions of the groins and the embayment would include riparian plantings and LWD similar to benching option.

Option 4: Bioengineered Rock Slope Protection

Option 4 is designed to halt lateral erosion completely and would only be used in cases where it is necessary to protect bridges, homes, wells or other valuable properties and infrastructure. The treatment would excavate into steep, eroding streambanks and some portion of the adjacent terrace and place rock slope protection (RSP or riprap) along the bank to provide erosion protection. A second option is to construct the structure within the channel where recent erosion has created a strongly divergent flow path, such as the right (west) bank above the Geyserville Bridge; the decision to do either treatment would be made on a case-by-case basis considering the advantages or disadvantages of each design. **Figure 4d** shows a conceptual drawing of this option. **Photos 7 and 8** show armored sections along the river that are representative of this concept. As shown in the photos, riparian vegetation is able to establish in the RSP. Trees such as white alder that are relatively uncommon along the project reach are able to establish in armored sections of the river because of the added bank stability.

The RSP revetment would include a bench set at an average elevation of 3 feet above the mean summer water surface elevation. The elevation and width of the bench would vary along the length of the bank to promote diversity and resilience of vegetation species. The entire bank (i.e., above and below the bench) would be revegetated with native species that are appropriate for the ecological and hydrologic conditions of the site. LWD would be placed on the bench to enhance physical and biological aspects of near bank fish habitat, as supply allows. LWD would be anchored to the bench with the use of large rock and cables or embedded in the bank.

Implementing Bank Enhancements

Implementing the proposed bank enhancements would require construction of access roads, excavation of bank material, placement of rock and LWD along the bank; and revegetation with native seed, cuttings and nursery container stock. Construction access would be in areas that minimize disturbance to existing riparian habitat, but some trees and shrubs may need to be removed. Excavation of streambank material would be performed from the top of banks using an excavator. Material generated during excavation of banks would be moved off-site or temporarily stockpiled in the designated upland staging/stockpiling area for use on future enhancement projects.

The rock barbs and groins would be constructed of boulders. Potential sources of this material include Canyon Rock in Forestville, CA, one or more of Syar's quarries (e.g., Napa, Vallejo) or locally salvaged natural rock. **Table 5** summarizes the volume of material that would be placed above and below OHW for each enhancement option.

Table 5. Surface area, excavation and placement volumes for bank enhancement options (per 100 linear feet)

Option	Surface Area (ft^2)	Excavation (cy)		Rock Fill (cy)	
		Above OHW	Below OHW	Above OHW	Below OHW
1- Benching	4,320	800	120	0	0
2- Barbs and Embayments	3,880	700	160	40	100
3- Groins and Embayments	4,520	760	190	25	205
4- Rock Slope Protection	4,650	740	810	155	605

Voids within the rock would be filled with native soil salvaged from the bank/terrace excavation. LWD would be placed in the enhancement area by either embedding the material into the bank, using pilings and cross-members, or fastening it to large, immobile rock with the use of steel cable. The entire enhancement area would be revegetated with the application of native seed and installation of woody shrub cuttings and can include container plants. **Table 2** provides a list of the plant species to be used for revegetation. Where possible, a temporary irrigation system would be installed to aid in the establishment of the native plants.

The sequence of construction activities would be as follows:

- Installation of appropriate BMPs (silt curtain, biological protection measures, etc.);
- Construct access roads and temporary staging area;
- Dewatering (if necessary)
- Excavate streambank and haul-out fill;
- Excavate area in bank for rock barbs or groins (Options 2-4 only);

- Place rock to construct rock barbs or groins (Options 2-4 only);
- Install erosion protection and disperse native seed;
- Install temporary irrigation system; and
- Revegetate with cuttings and container stock plants.

2.3.4 Other Mainstem Habitat Enhancements

Large Woody Debris Jams

Large woody debris jams or engineered log jams can serve multiple project objectives including bank protection and fish habitat enhancement. As mentioned previously, LWD retention in the project reach is limited due to changes in river dynamics and watershed conditions. Creating engineered log jams would involve importing, placing and securing large wood in the channel. **Figure 5** shows a conceptual drawing of this option. Public safety, recreation and liability issues will need to be addressed in the process of planning, designing and implementing this type of structure.

Constructing the LWD jams would require access along the margins of the low-flow channel; excavation of bed material; and placement of LWD and rock. Construction access would be in areas that minimize disturbance to existing riparian habitat, typically at the downstream end of eroding banks. Excavation of streambed material would be performed from streambanks or gravel bars using SEME equipment. Material generated during excavation would be moved off-site.

LWD piles would be installed vertically into the streambed by over-excavating trenches, placing the logs, then backfilling the trenches with native stream substrate. LWD would then be stacked and keyed between the piles. Large rock may be placed to ballast LWD. Steel cable may be used to secure LWD to the ballast rock. The LWD jams would be constructed in the summer or early fall. Dewatering is not expected to be necessary. If materials (e.g., rock or LWD) are to be placed in active waters, BMPs such as silt curtains would be used and turbidity would be monitored.

Arundo Control

Arundo control is an important aspect of the REP and should be considered a priority given the widespread distribution and recent expansion of the infestation in the project reach. Circuit Rider Production, and Sotoyome and Mendocino County Resource Conservation Districts are currently implementing an *Arundo* removal program in the Russian River watershed. These groups utilize several methods to control *Arundo*, most of which involves mechanical and/or chemical (i.e., herbicide) treatments.

Figures ES-1a through ES-1c show the current extent of *Arundo* infestation in the project reach. The Sotoyome RCD has begun treating areas in the upper portion of the project reach and will continue their efforts working in the downstream direction. Syar is participating in this program by allowing access to their property along the river. As part of this REP Syar would continue to participate in this program and coordinate additional *Arundo* control efforts with the existing removal program.

2.3.5 Tributaries Enhancements

In addition to the enhancement concepts developed for the mainstem of the river, the REP in the future may incorporate tributary enhancements to offset habitat deficiencies identified in the *Draft Habitat Restoration and Conservation Plan for Anadromous Salmonid Habitat in Selected Tributaries of the Russian River Basin* (NMFS 2007). The projects have not yet been defined but would likely involve: 1) pool and cover enhancements with placing LWD and/or large rocks to promote scour; and 2) bench excavation and revegetation to create an overstory canopy.

2.4 AVOIDANCE AND MINIMIZATION MEASURES

All REP projects would be constructed between June 1 and November 1. A pre-construction survey for special status species and nesting migratory birds would be completed within 200 feet of the enhancement area. If special status species are detected the project proponents will consult with the Interagency Group to determine appropriate avoidance or minimization measures. If nesting birds are detected, then construction would begin after August 1 or when the nesting birds have fledged.

In most cases dewatering is not expected to be necessary. If materials (e.g., rock or LWD) are to be placed in active waters, BMPs such as silt curtains would be used and turbidity would be monitored. If bank enhancements involve significant work in, or realignment of, the low-flow/active stream channel, then a dewatering plan would be implemented. The dewatering operation would include the following:

- Excavation of a temporary by-pass channel through the gravel bar opposite the bank enhancement;
- Gradually place a gravel berm at the upstream end of the enhancement area to divert the river into the temporary channel and away from the construction area;
- Placement of a smaller gravel berm at the downstream end of the enhancement area to prevent encroachment of a backwater from the river;
- Construction of the bank enhancement
- Re-contouring or grading of the low-flow channel
- Breaching and rewatering the main channel
- Backfilling the temporary by-pass channel

As the existing channel is closed and begins to dewater, fish may become stranded along the stream margins and in shallow pockets left behind by receding waters. A fishery biologists and technicians would patrol the margins with capture gear and holding buckets to rescue as many fish as possible for return to flowing water. A series of passes with electroshocking gear and fine-mesh nets would attempt to capture and remove any fish within the remaining pools. After the lower end of the construction zone is closed by the second berm, another pass with electroshocking gear and fine-mesh nets would be made to capture and remove any remaining fish. The dewatering process would be considered complete when electroshocking and netting yield no fish.

3.0 ADAPTIVE MANAGEMENT AND MONITORING

3.1 ENHANCEMENT PLAN PROCESS

3.1.1 Syar's Contribution to REP Projects

The scope and scale of the REP will be determined by financial resources made available through instream mining and contributions made by other river stakeholders. Syar would contribute materials, construction services, design and support services, and/or fees equal to $0.30 per ton of aggregate material mined from the project reach over the 15-year project term. It is estimated that approximately 350,000 tons of aggregate would be mined annually; hence the annual REP contribution would be $105,000, with a total of $1,575,000 allocated over 15 years. These funds could be used for various aspects of REP project implementation including construction services and materials. Over the 15-year project term Syar estimates that their contribution would be sufficient to fund the following REP projects:

1) The Syar –proposed enhancement projects (i.e., 3 oxbows and 3 alcoves), and
2) Five acres of riparian forest planting primarily focused on cottonwood forest restoration.

The total area of riparian forest planting associated with the oxbow projects is more than 6 acres. Thus, over 11 acres of riparian forest restoration would be completed by Syar under the proposed REP projects. Cost estimates will be provided when specific projects are chosen for any given year. If the Interagency Group determines that other REP projects are of higher priority than the projects listed above, then the funds/resources that Syar contributes can be allocated accordingly. Syar's obligations will be set in a manner that retains the economic viability of the instream mining project.

3.1.2 Annual Project Decision Making and Adaptive Management Program

A formal Adaptive Management Program (AMP) has been set forth in the project Environmental Impact Report (Sonoma County PRMD, in prep). In summary, PRMD, the Interagency Group and Syar would convene each winter to discuss the location and type of REP project(s) to be completed the following summer/fall. Ideally, the location of REP projects would be adjacent to the location of instream mining in order to retain efficiencies for construction access, equipment mobilization and demobilization and moving of materials. As described above, Syar has developed six specific REP projects that are being proposed within a six-year period of the proposed 15-year use permit. Decisions to have Syar contribute and/or participate in other REP projects will depend partly on the sequence of mining locations and on mutual decisions of phasing by Syar, PRMD and the Interagency Group.

Syar would use the direction from the winter meeting to develop a draft Annual Plan for the following summer/fall construction season using base topography from the previous year. Syar, PRMD and the Interagency Group would convene again in spring to review the draft Annual Plan and to review data collection from the previous post-winter surveys. A final draft Annual Plan would be prepared and circulated for review by May 1 and approval would be targeted for June 1. Construction activities would occur between June 1 and November 1.

Adaptive management means that decisions regarding the sequence of REP projects (and mining) are guided by applying specific objectives and results of data collection and review. The purpose is to allow informed decision-making on a year-to-year basis in order to be responsive to the dynamic conditions of the river. The annual consultations between Syar, PRMD and the Interagency Group would serve as the mechanism to review data and plans for each season. The development of programmatic REP projects would ensue from decisions regarding priorities for river management. In addition, there may be opportunities for synergy between the mining plan and REP projects. A prime concern along the project reach is the occurrence and recent acceleration of bank erosion. As managing these processes are goals of the ARM Plan, this may lead decision makers to move towards locating bar skimming operations to a location where reduction in bar heights could reduce erosional force.

3.2 MAINTENANCE, MONITORING AND PERFORMANCE

3.2.1 Maintenance

The proposed enhancement projects are designed to enhance the river environment and the geomorphic processes that form and sustain habitats. The nature of rivers involves creation and destruction of landforms, processes which plants and animals are adapted to. The proposed REP projects are situated within the dynamic river setting and will be subject to change of recurrent erosion, sedimentation and scour processes. Alcoves and oxbows could be subject to filling, benched and revegetation areas may be eroded, and bank protection structures may be subject to erosion damage. One objective of the REP is to create new tracks of riparian forest on surfaces that will erode in the future and become a source for LWD in aquatic habitats. Thus, REP projects should be viewed as dynamic features and maintenance efforts should be considered accordingly.

Regular maintenance of the enhancement projects by Syar would generally be limited to establishment of native riparian vegetation and control of invasive species, particularly *Arundo*, within the specified enhancement project areas. Maintenance activities would include irrigation, weed removal, basin repair and replanting. Other maintenance may include erosion control or small-scale grading. Maintenance actions will be driven by annual monitoring of the enhancement project, which is discussed below.

If the enhancement projects created by large-scale earth grading such as oxbows and alcoves are significantly altered by natural river processes (e.g., sedimentation or erosion), repairs or replacements involving heavy equipment and/or significant materials (rocks or logs) would be credited as additional river enhancement projects. In some cases, the alcoves or oxbows could be re-worked periodically when the adjacent bar areas are mined (once every 6 years); depending upon the scale, this could count as whole or part of an annual enhancement project. Maintenance requirements for bank enhancements and/or bank protection projects that Syar may participate in whole or in part will be established at the time of individual project design and implementation. Syar may or may not have a maintenance obligations depending upon the nature of the project and the owner/proponent. Syar's maintenance efforts beyond revegetation success would be credited to future enhancement projects.

3.2.2 Monitoring & Performance

Monitoring will be conducted in accordance with the conditions stipulated in the individual permits (e.g., USACE 404 permit, RWQCB 401, CDFG 1600) granted for the mining plan. It is anticipated that all of the permit monitoring conditions will be summarized into a single Monitoring and Reporting Plan to facilitate the execution and communication of the permit requirements. The monitoring plan will likely include measurements of topography, water quality, fisheries and vegetation. Performance criteria will be established for various parameters within each of the monitoring disciplines. The monitoring and reporting will be closely tied to the adaptive management of the REP and the maintenance of projects.

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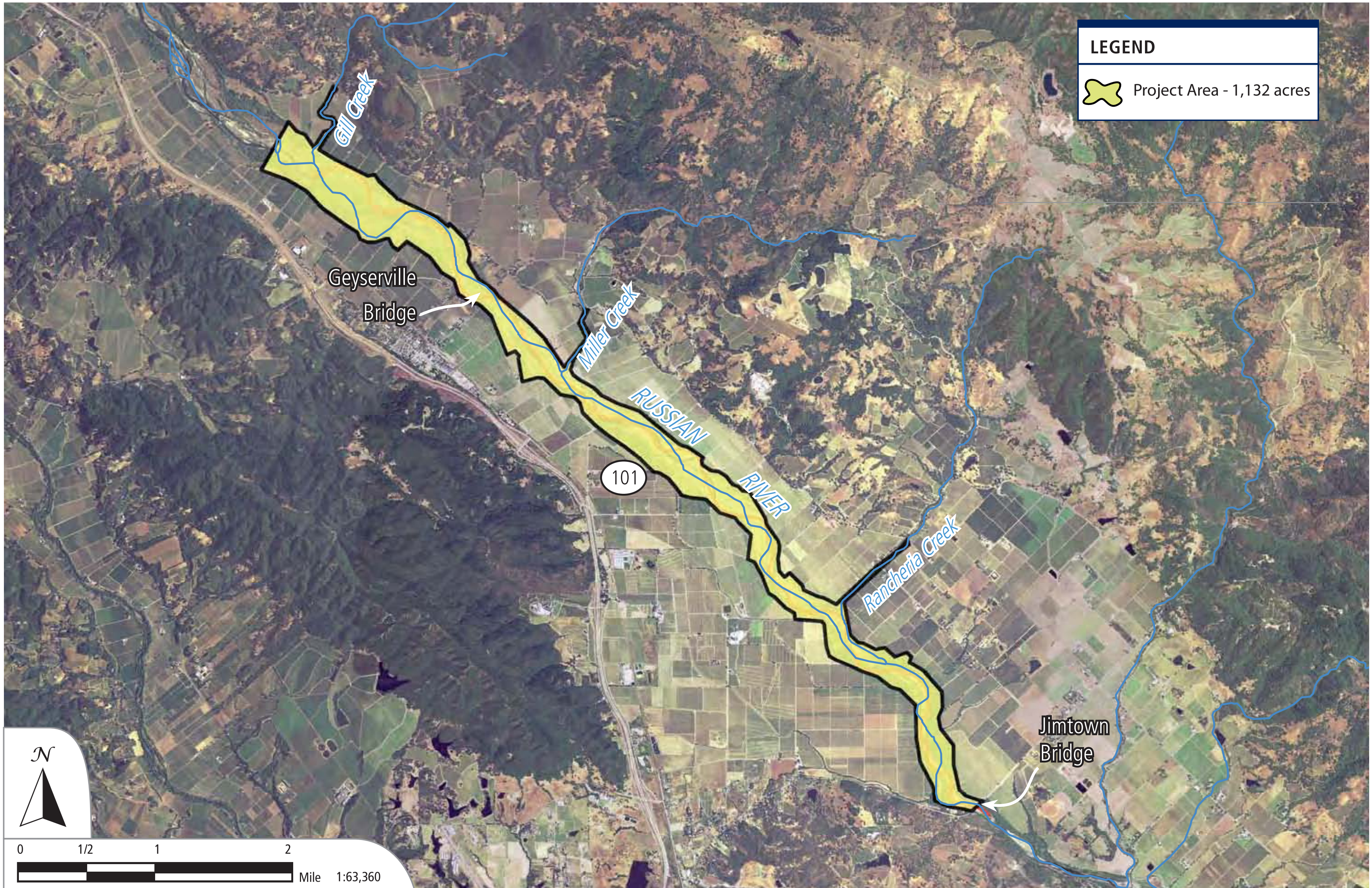
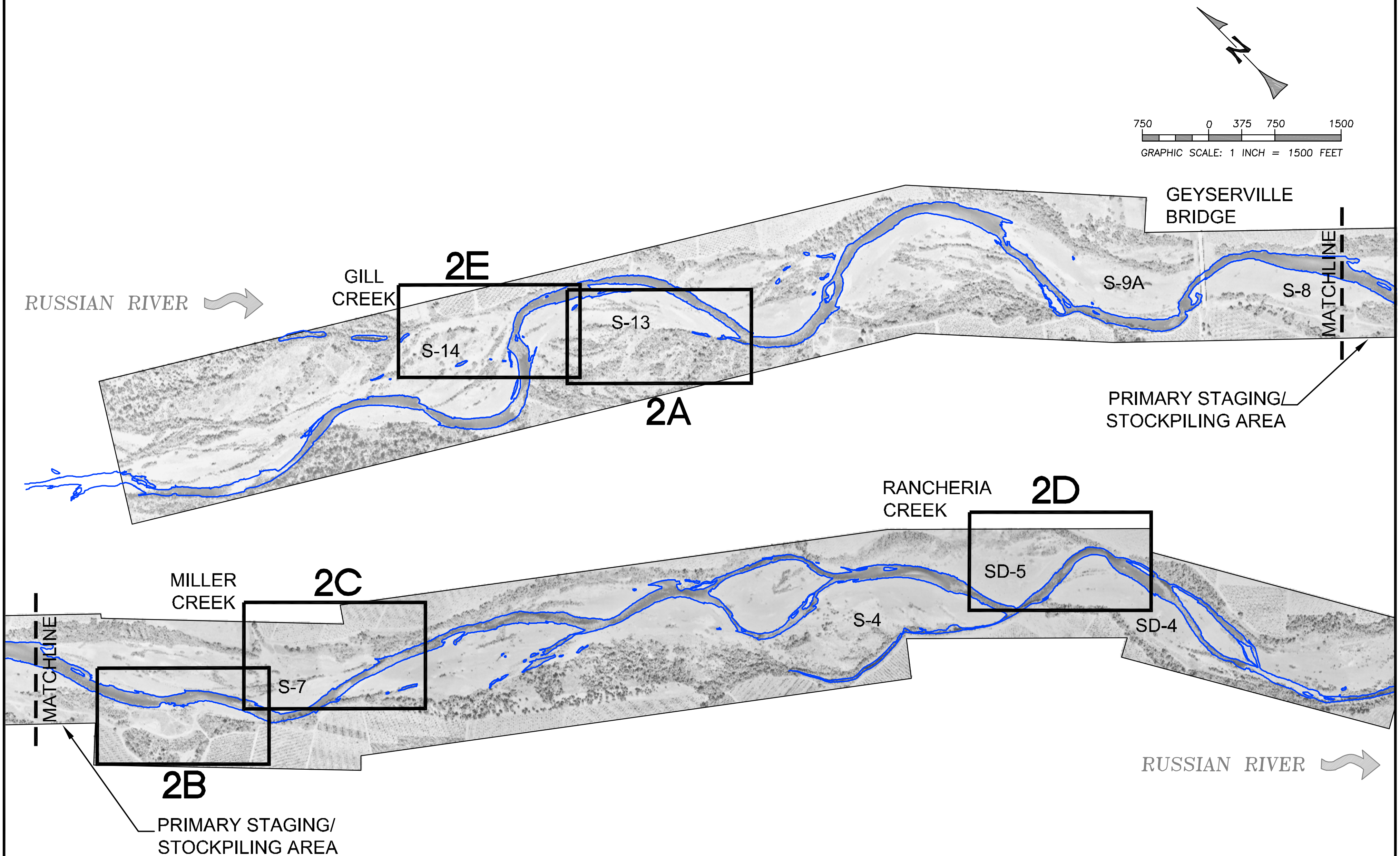
RUSSIAN RIVER - ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

FIGURES



SWANSON HYDROLOGY + GEOMORPHOLOGY
500 Seabright Ave, Suite 202 Santa Cruz, CA 95062
PH 831.427.0288 FX 831.427.0472

FIGURE 1: Map of the River Enhancement Program (REP) project area.



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LEGEND

FIGURE LOCATION — 2E (box)

ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

OXBOW AND ALCOVE
PROJECT
INDEX MAP

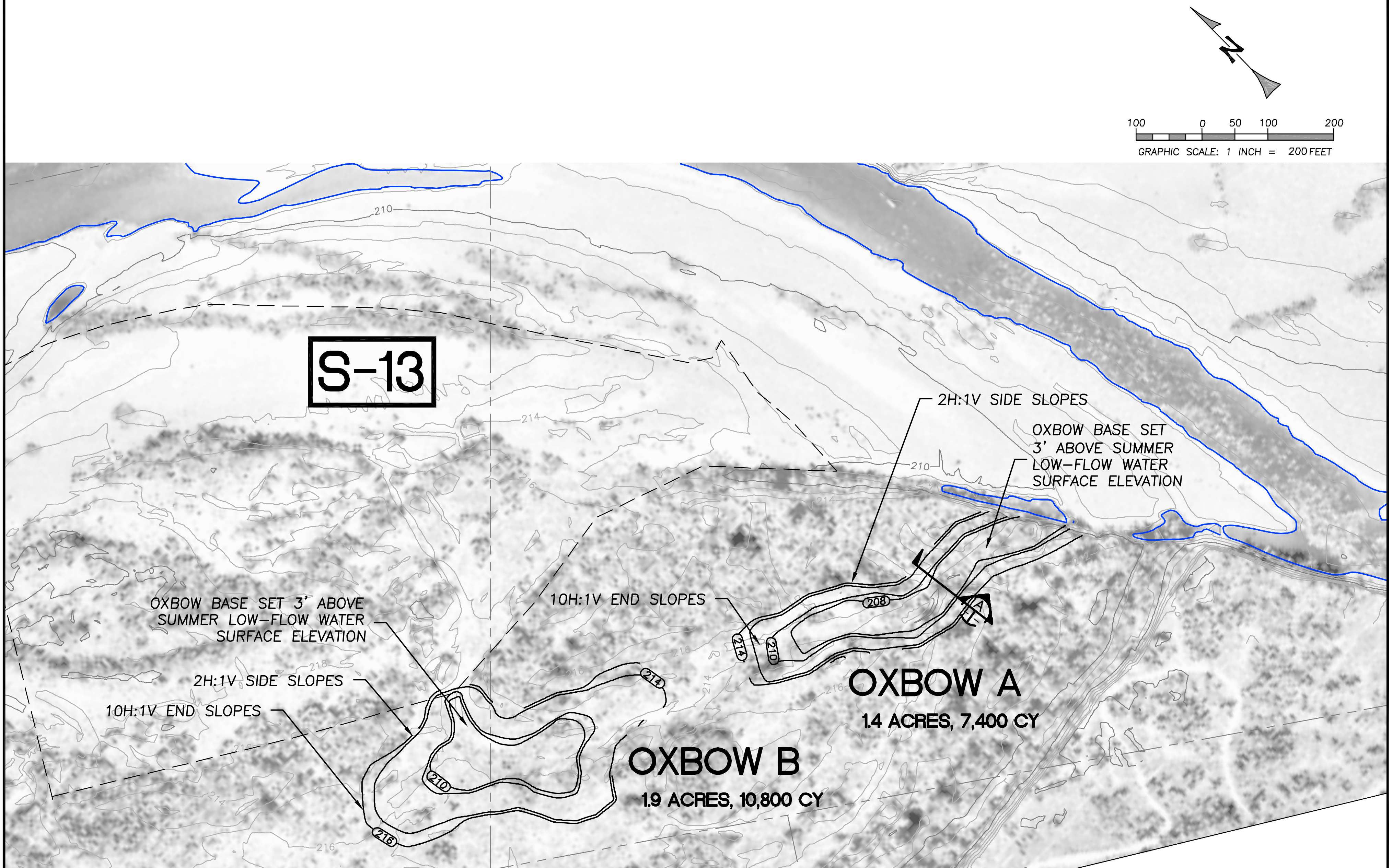
DRAFT

NOT FOR CONSTRUCTION

DATE: 7/1/08

JOB NO.: 08-655

FIGURE 2



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LEGEND

EXISTING GROUND CONTOURS	200 / 198
FINISHED GRADE CONTOURS	200
LIMITS OF MINING (2006)	— — —
PARCEL BOUNDARY	— – – —

ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

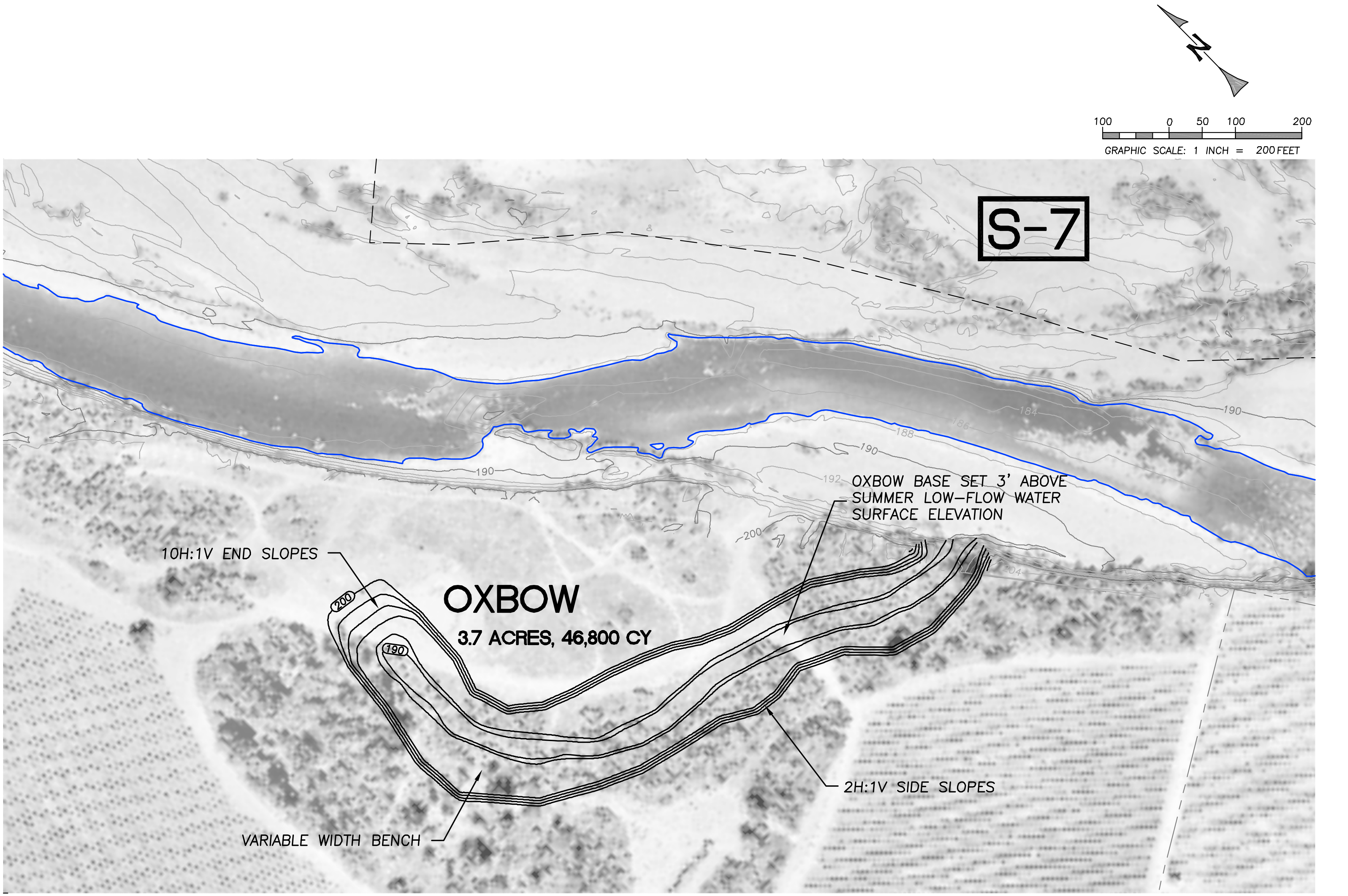
BAR S-13
OXBOWS

DRAFT

NOT FOR CONSTRUCTION

DATE: 7/1/08
JOB NO.: 08-655

FIGURE 2A



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LEGEND

EXISTING GROUND CONTOURS	200 / 198
FINISHED GRADE CONTOURS	200
LIMITS OF MINING (2006)	— — —
PARCEL BOUNDARY	—— – – ——

ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

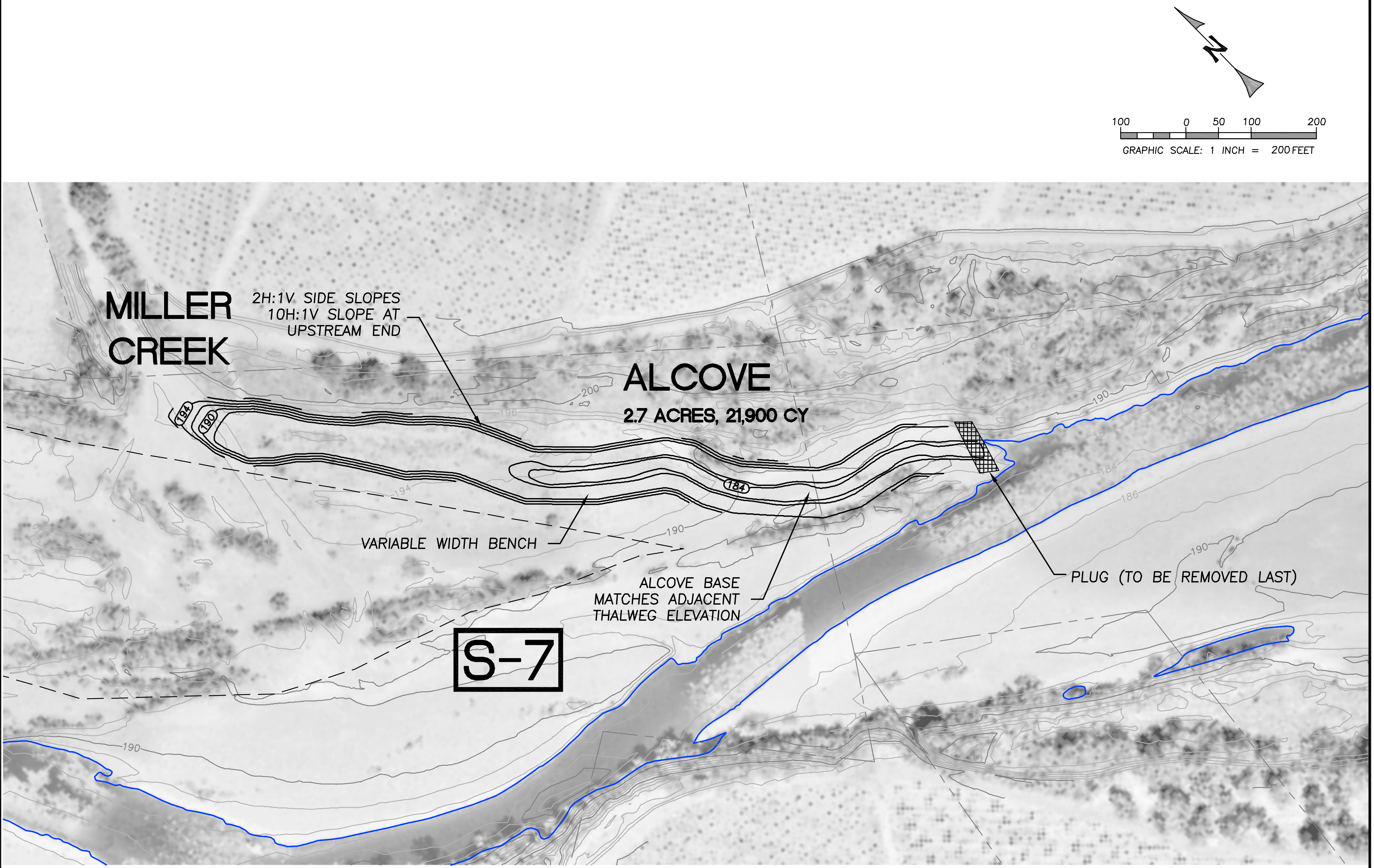
BAR S-8
OXBOW

DRAFT

NOT FOR CONSTRUCTION

DATE: 7/1/08
JOB NO.: 08-655

FIGURE 2B



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LEGEND

- EXISTING GROUND CONTOURS — 200 — 198
- FINISHED GRADE CONTOURS — 200
- LIMITS OF MINING (2006)
- PARCEL BOUNDARY

ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

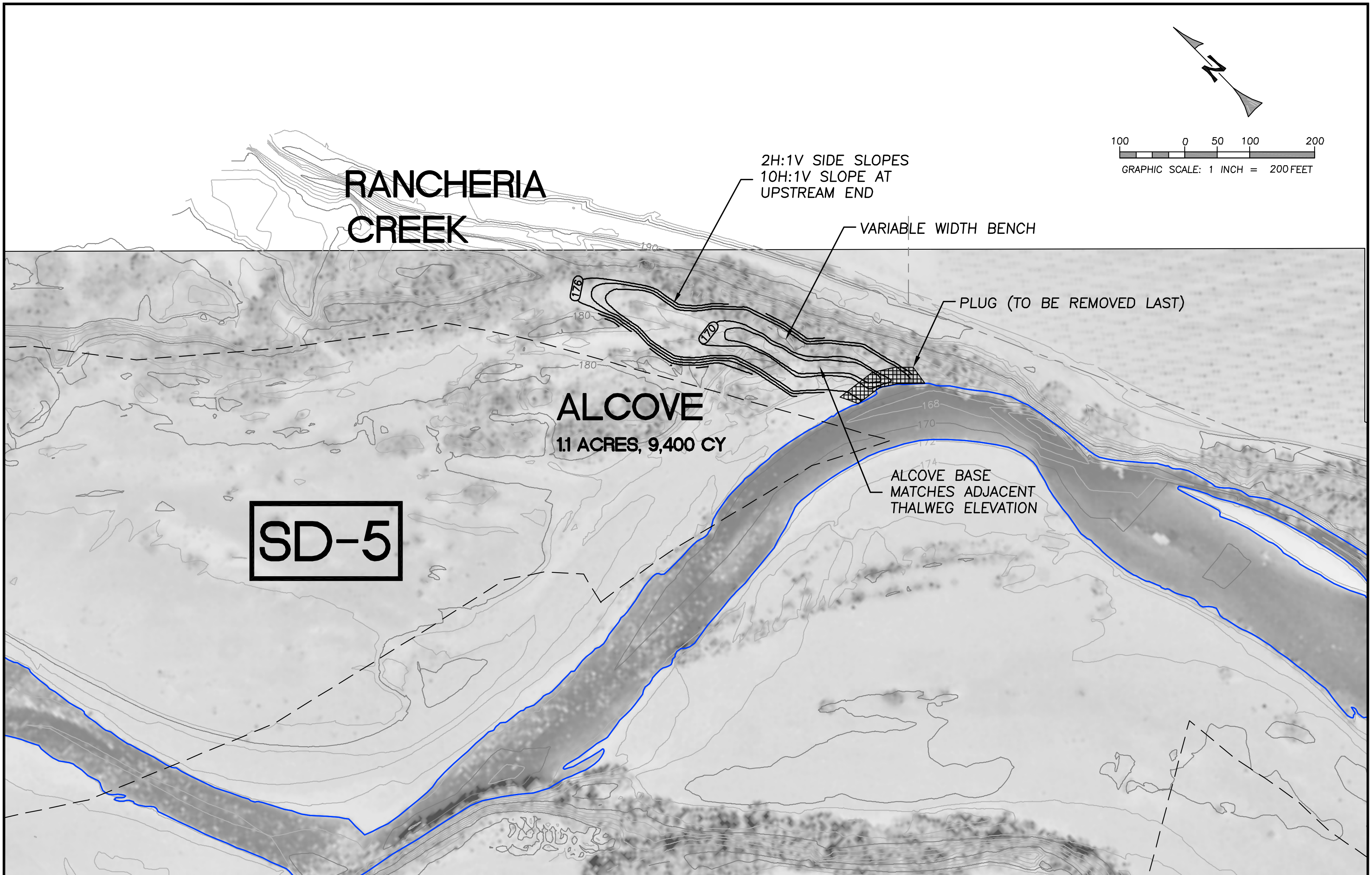
MILLER CREEK
ALCOVE

DRAFT

NOT FOR CONSTRUCTION

DATE: 7/1/08
JOB NO.: 08-655

FIGURE 2C



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LEGEND

EXISTING GROUND CONTOURS	200 198
FINISHED GRADE CONTOURS	200
LIMITS OF MINING (2006)	— — — —
PARCEL BOUNDARY	—— – – ——

ALEXANDER VALLEY RIVER ENHANCEMENT PLAN

RANCHERIA CREEK ALCOVE

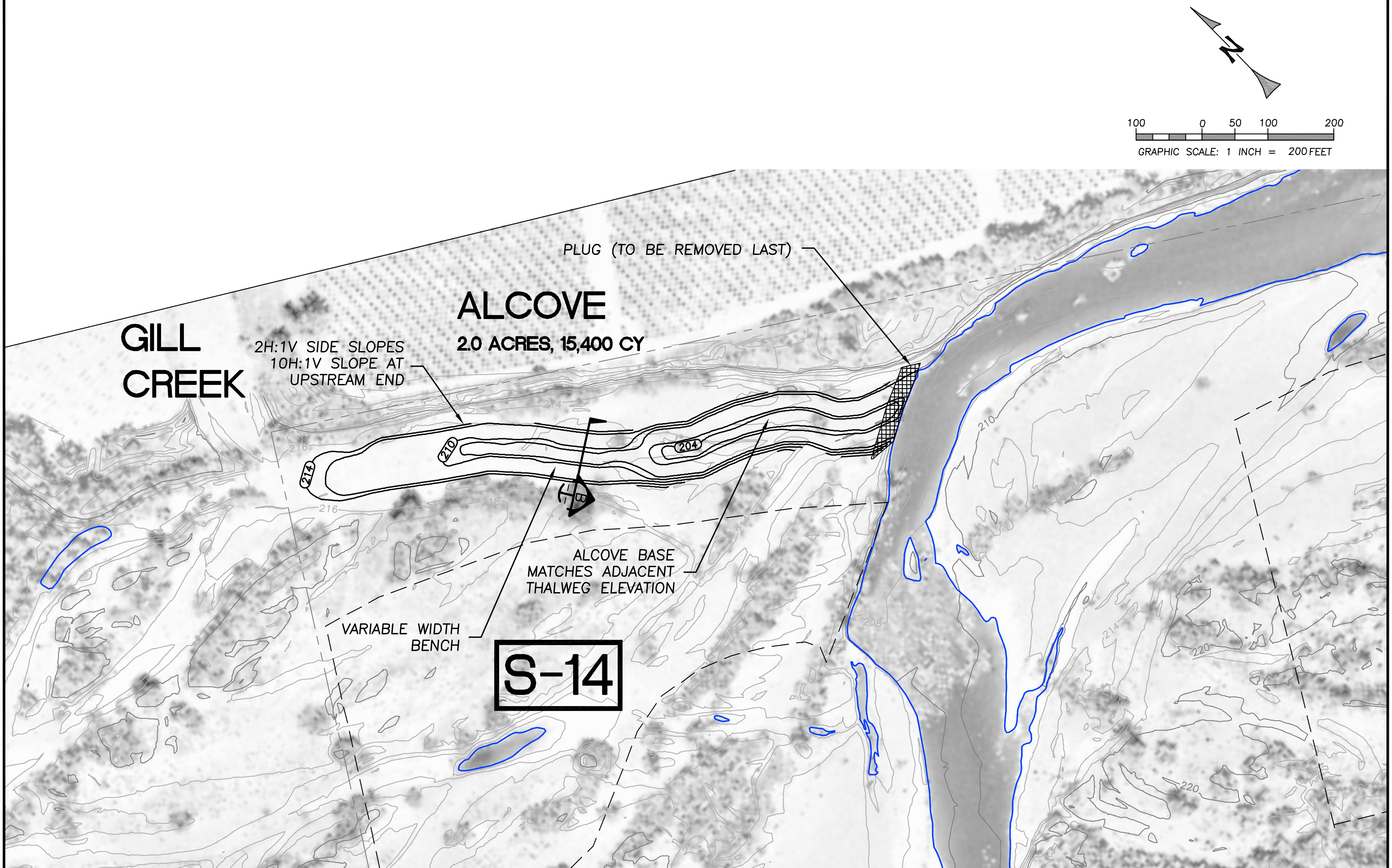
DRAFT

NOT FOR CONSTRUCTION

DATE: 7/1/08

JOB NO.: 08-655

FIGURE 2D



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LEGEND

EXISTING GROUND CONTOURS	200 / 198
FINISHED GRADE CONTOURS	200
LIMITS OF MINING (2006)	— — —
PARCEL BOUNDARY	— — —

ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

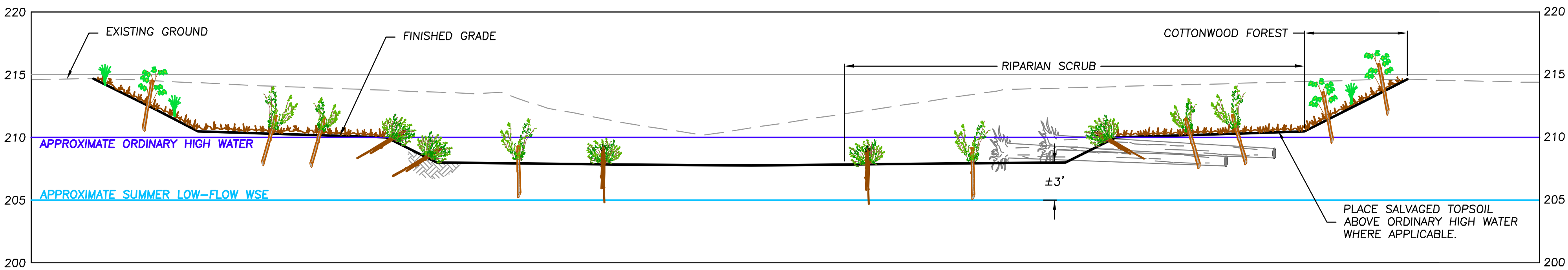
GILL CREEK
ALCOVE

DRAFT

NOT FOR CONSTRUCTION

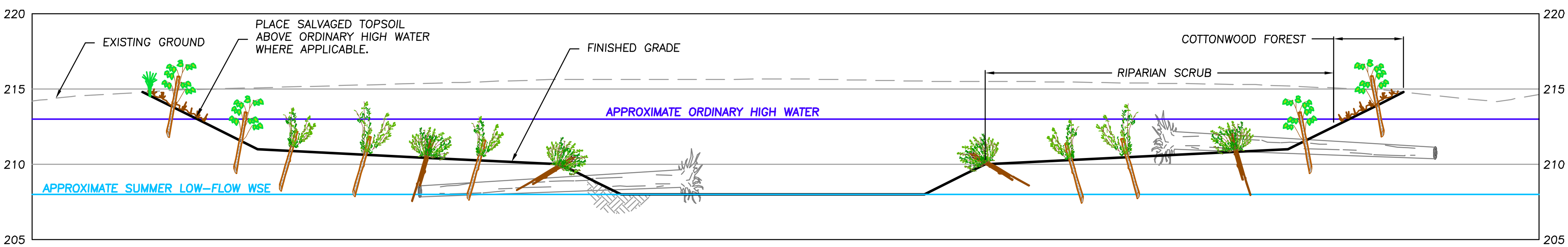
DATE: 7/1/08
JOB NO.: 08-655

FIGURE 2E



TYPICAL OXBOW SECTION (A)

SCALE: 1"=12'



TYPICAL ALCOVE SECTION (B)

SCALE: 1"=10'

NOTE: REFERENCE TABLE 2 FOR THE PLANTING PALETTE.

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ALEXANDER VALLEY RIVER ENHANCEMENT PLAN

TYPICAL SECTION

DRAFT

NOT FOR CONSTRUCTION

DATE: 7/1/08

JOB NO.: 08-655

FIGURE 2F

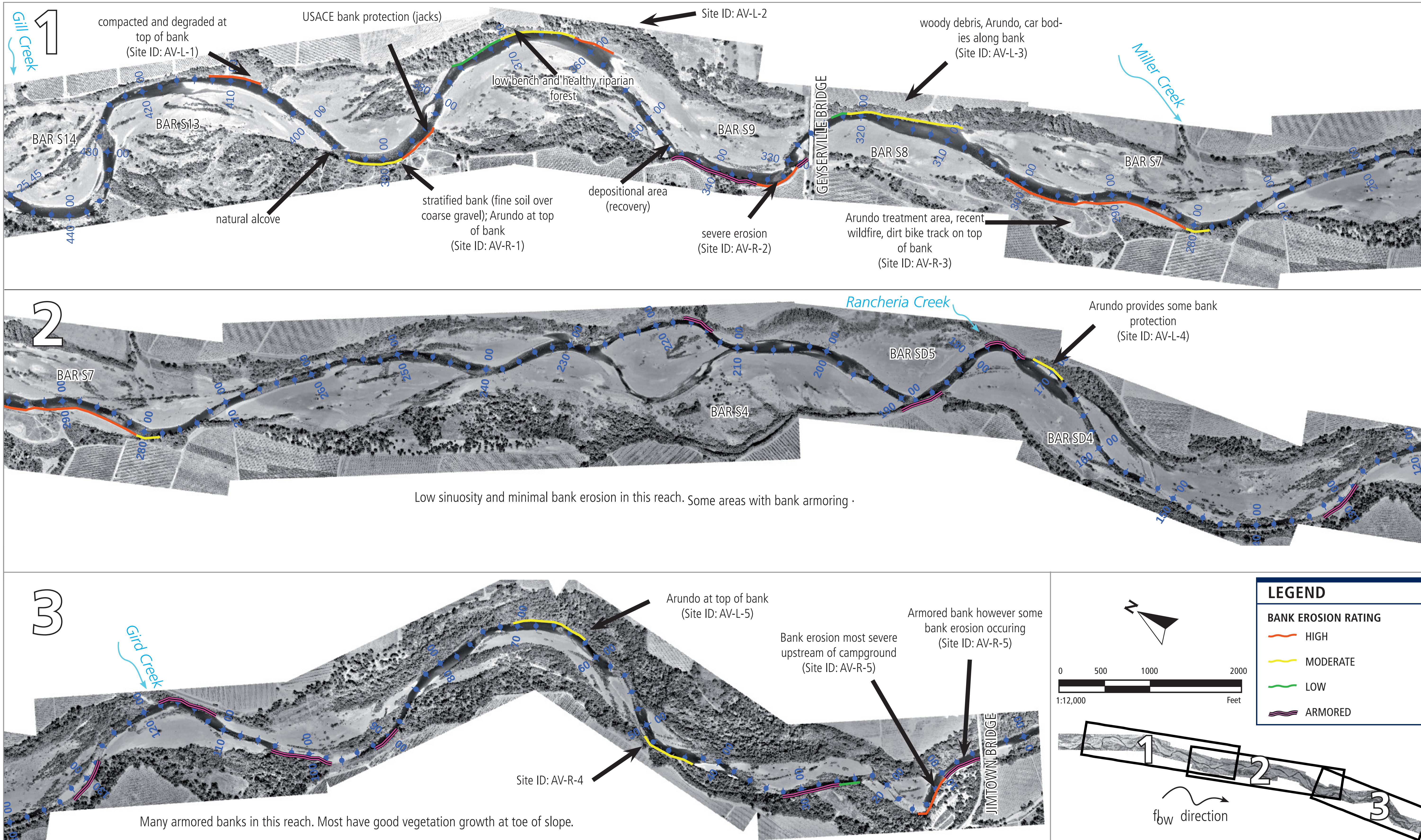

FIGURE 3: Erodibility rating for streambanks in the Alexander Valley reach of the Russian River (March 2008).

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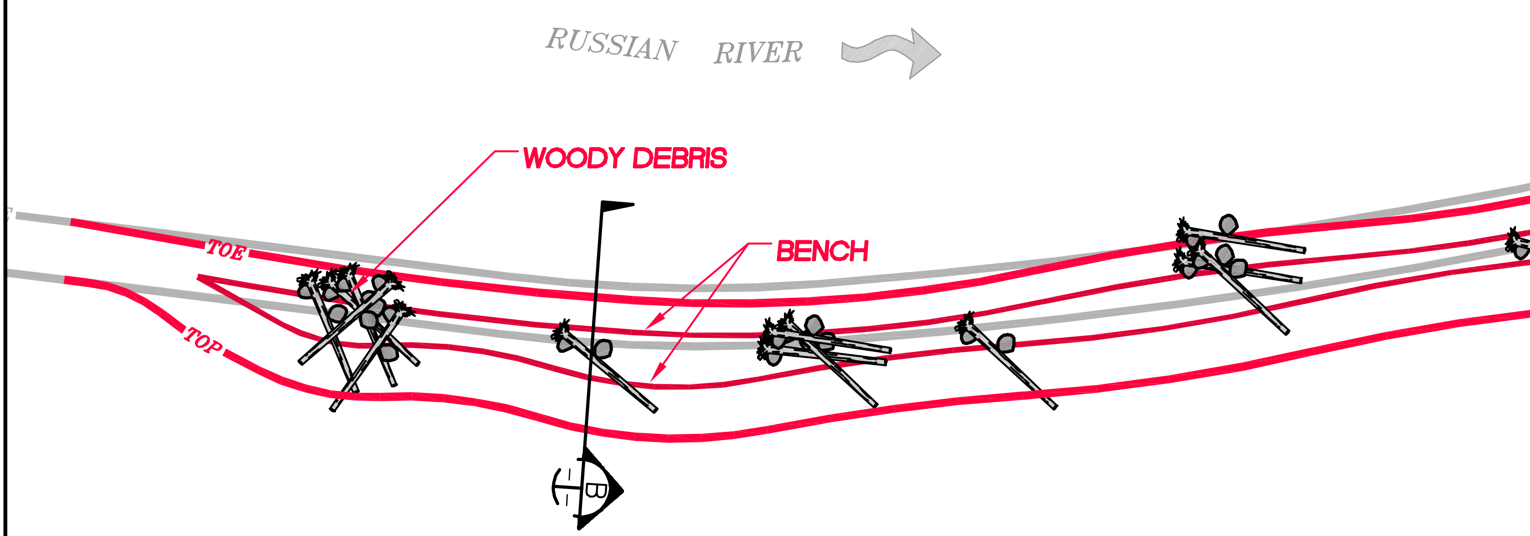
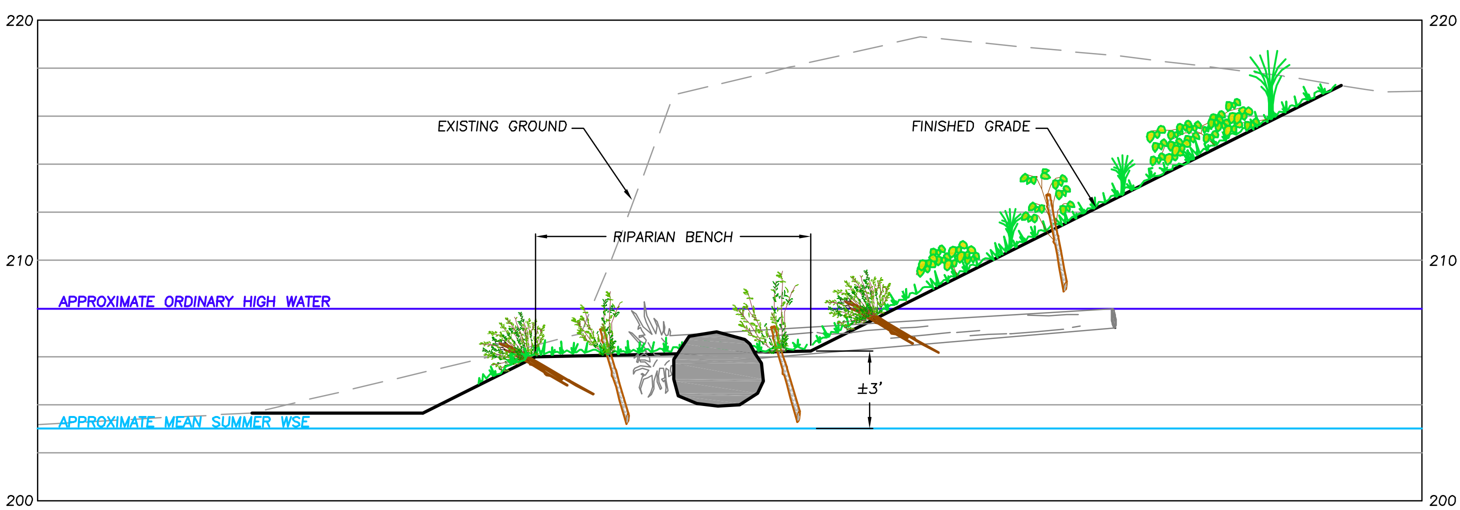


PLAN VIEW
SCALE: 1"=60'

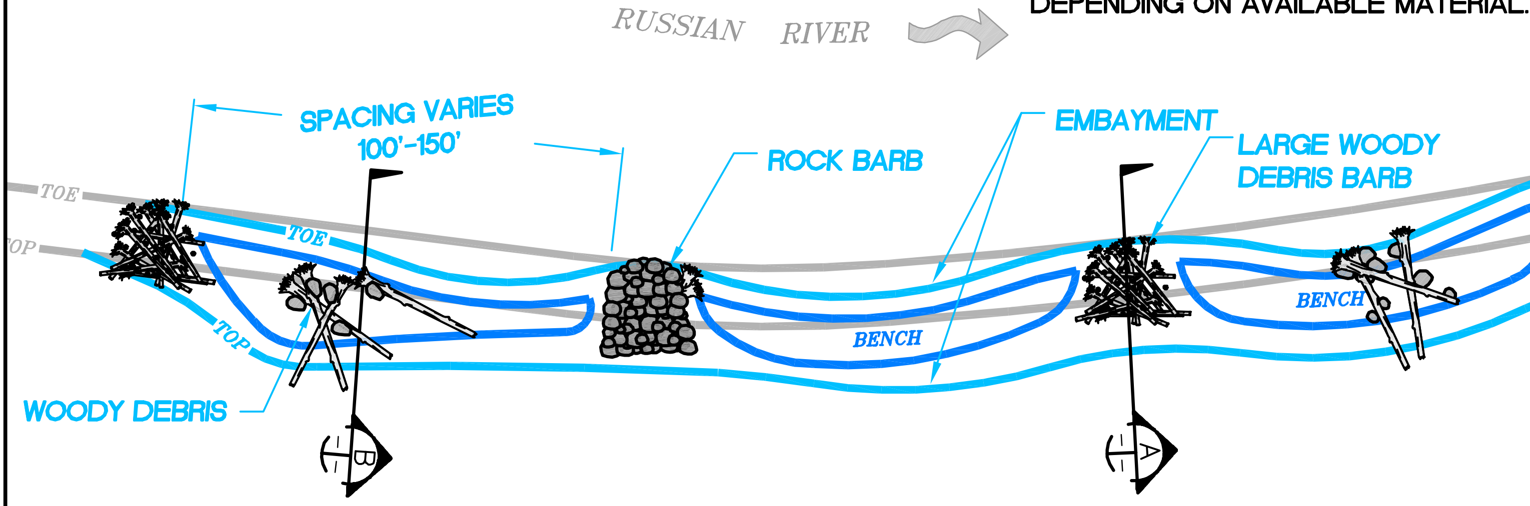


BENCH SECTION (B)
SCALE: 1"=8'

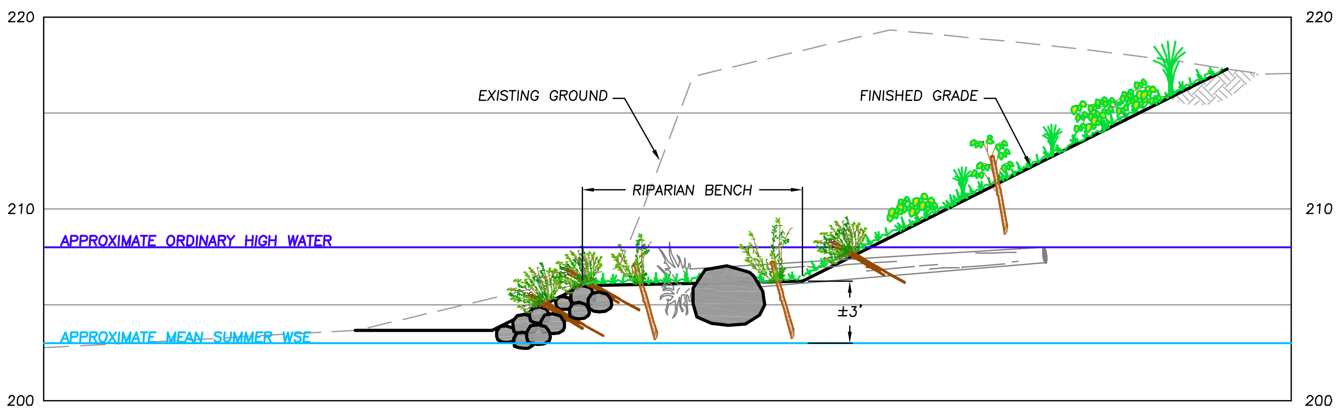
DATE: 7/01/08
JOB NO.: 08–655

Swanson Hydrology + Geomorphology 500 SEABRIGHT AVE., SUITE 202 SANTA CRUZ, CA 95062 (831)–427–0288 A Division of Swanson Hydrology + Geomorphology	ALEXANDER VALLEY RIVER ENHANCEMENT PLAN	OPTION 1: BENCHING	DRAFT NOT FOR CONSTRUCTION FIGURE 4A

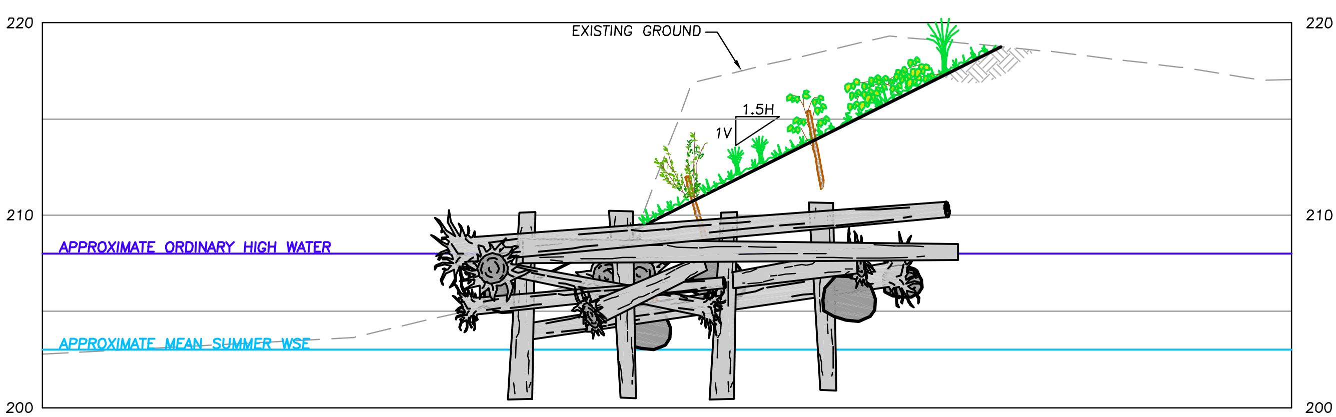
NOTE:
BARBS MAY BE CONSTRUCTED OF ROCK OR LARGE WOODY DEBRIS, DEPENDING ON AVAILABLE MATERIAL.



PLAN VIEW
SCALE: 1"=60'



EMBAYMENT SECTION (B)
SCALE: 1"=10'



BARB SECTION (A)
SCALE: 1"=10'

DATE: 7/01/08
JOB NO.: 08-655

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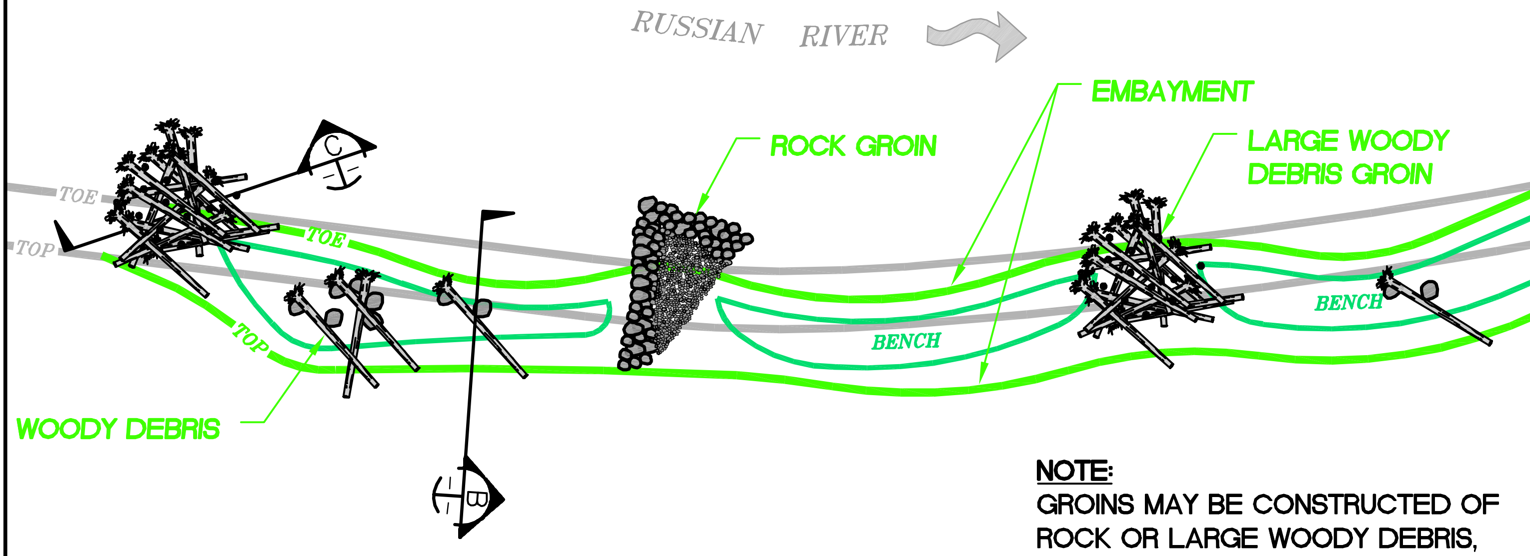
ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

OPTION 2:
BARB AND EMBAYMENT

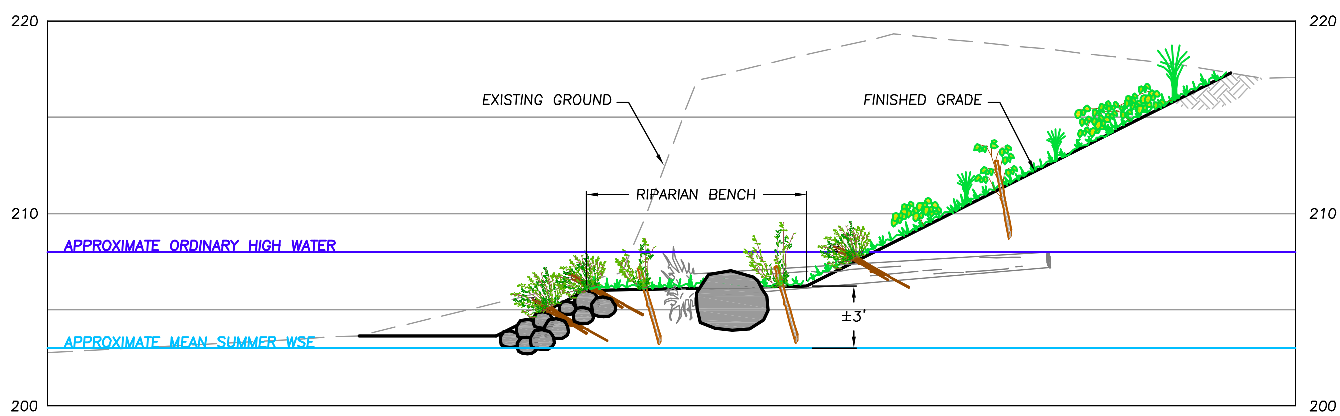
DRAFT
NOT FOR CONSTRUCTION

FIGURE 4B

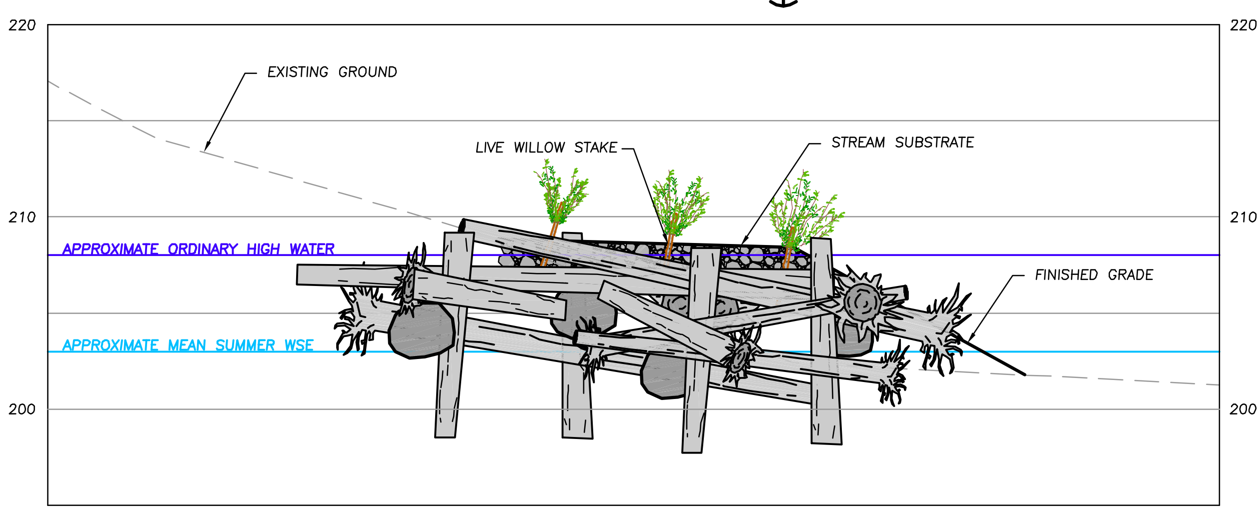


NOTE:
GROINS MAY BE CONSTRUCTED OF ROCK OR LARGE WOODY DEBRIS, DEPENDING ON AVAILABLE MATERIAL.

PLAN VIEW
SCALE: 1"=60'



EMBAYMENT SECTION B
SCALE: 1"=10'



GROIN SECTION C
SCALE: 1"=10'

DATE: 7/01/08
JOB NO.: 08-655

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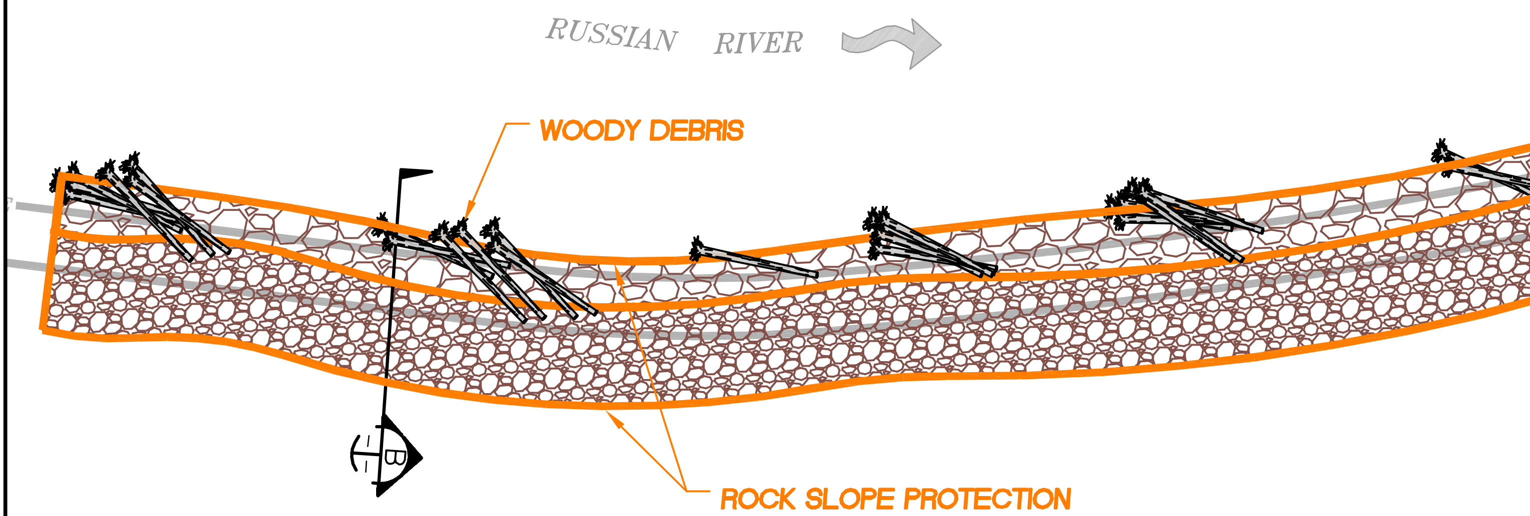
ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

OPTION 3:
GROIN AND
EMBAYMENT

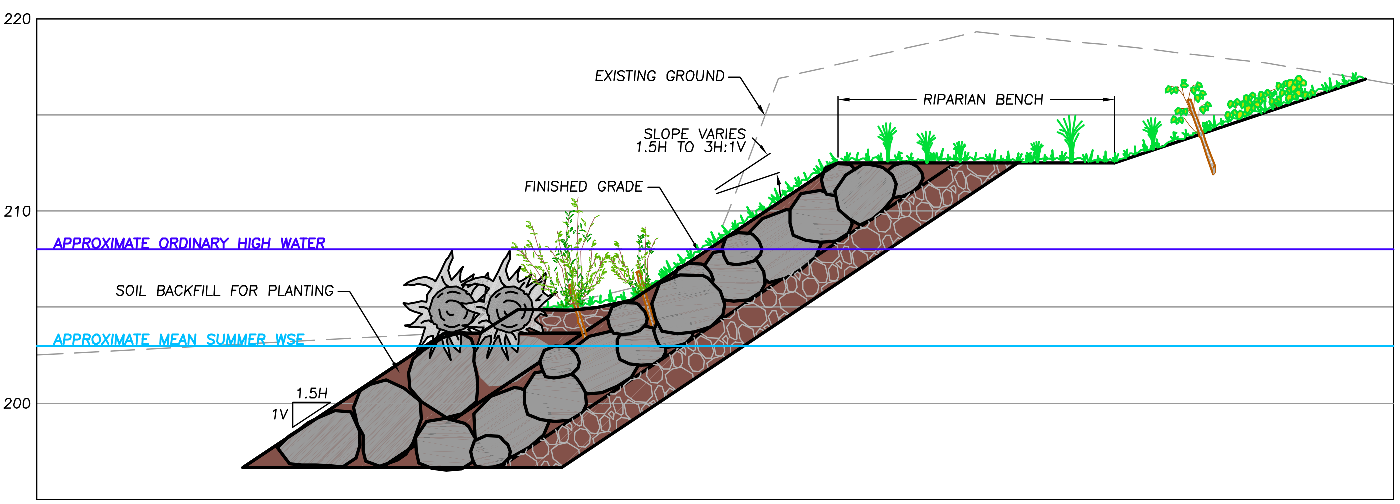
DRAFT
NOT FOR CONSTRUCTION

FIGURE 4C

R:\LAND PROJECTS\03-348_SYAR_Alexander_Valley\dwg\SHG-2007 ALEXANDER VALLEY-BANK PROTECTION FIGS.dwg 4/2/2008 11:39:47 AM PDT



PLAN VIEW
SCALE: 1"=60'



SECTION B
SCALE: 1"=10'

DATE: 7/01/08
JOB NO.: 08–655

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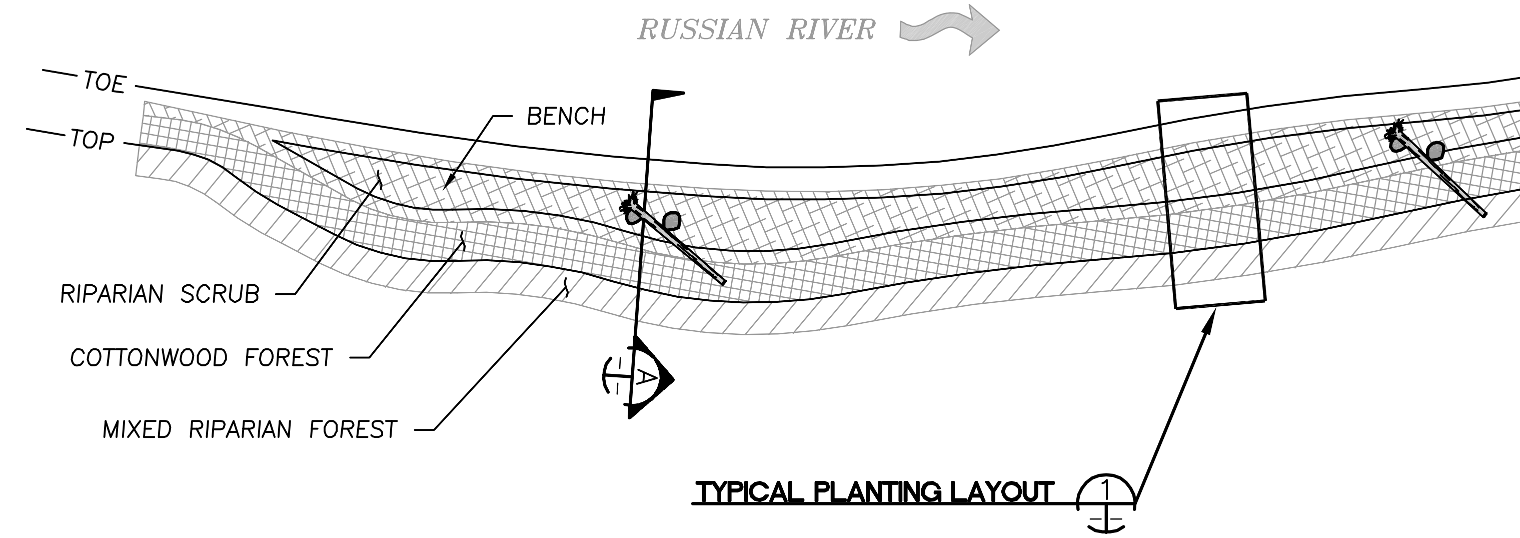
ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

OPTION 4:
ROCK
SLOPE
PROTECTION

DRAFT
NOT FOR CONSTRUCTION

FIGURE 4D

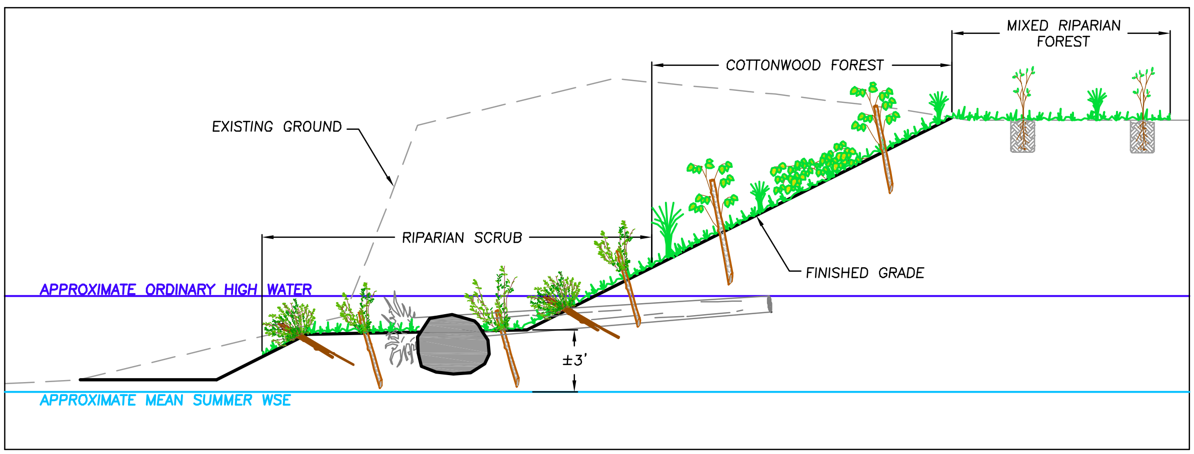
R:\LAND PROJECTS\03-348_SYAR_Alexander_Valley\dwg\SHG-2007 ALEXANDER VALLEY-BANK PROTECTION FIGS.dwg 4/2/2008 11:39:47 AM PDT



TYPICAL PLANTING LAYOUT

PLAN VIEW

SCALE: 1"=60'



TYPICAL REVEGETATION SECTION

SCALE: 1"=10'

LEGEND

RIPARIAN SCRUB

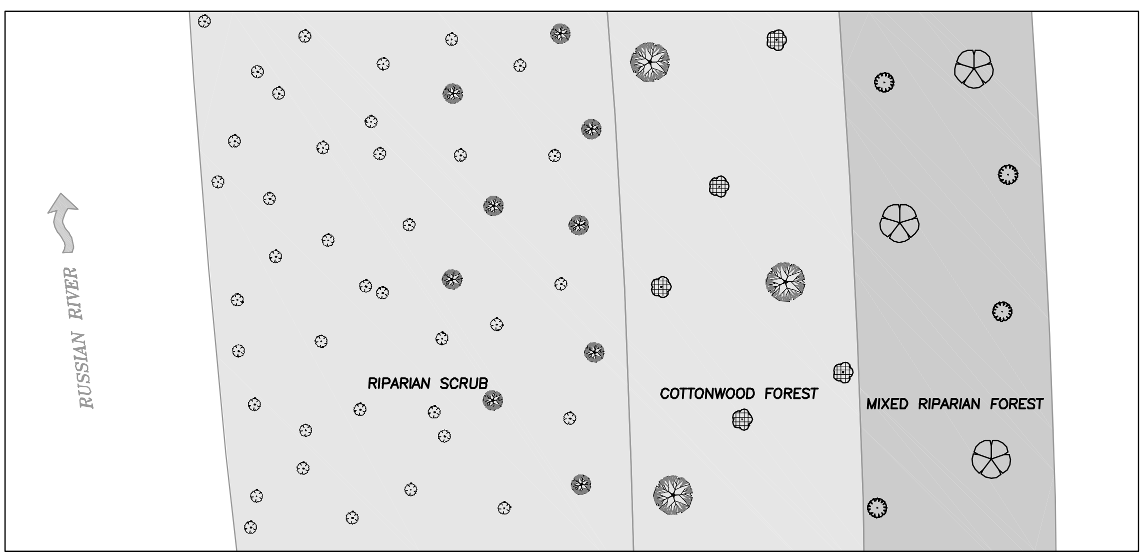
- WILLOW AND MULE FAT CUTTINGS
- COTTONWOOD AND ALDER CUTTINGS
- LOWER SEED MIX

COTTONWOOD FOREST

- SHRUB PLANTING
- TREE PLANTING
- LOWER SEED MIX

MIXED RIPARIAN FOREST

- SHRUB PLANTING
- TREE PLANTING
- UPPER SEED MIX



NOTE: REFERENCE TABLE 2
FOR THE PLANTING PALETTE.

TYPICAL PLANTING LAYOUT

SCALE: 1"=10'

DATE: 7/01/08
JOB NO.: 08-655

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ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

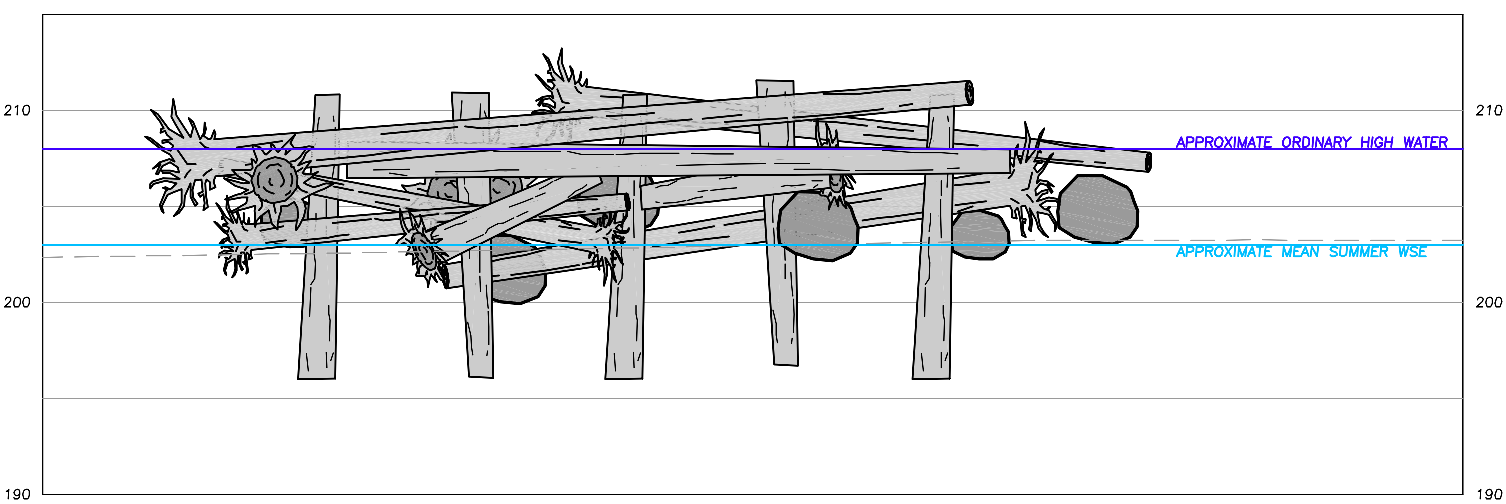
REVEGETATION
PLAN

DRAFT
NOT FOR CONSTRUCTION

FIGURE 4E

R:\LAND PROJECTS\03-348_SYAR_Alexander_Valley\dwg\SHG-2007 ALEXANDER VALLEY-BANK PROTECTION FIGS.dwg 4/2/2008 11:39:47 AM PDT

PLAN VIEW
SCALE: 1"=60'



SECTION
SCALE: 1"=10'
A

DATE: 7/01/08
JOB NO.: 08-655

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ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

LOG DEBRIS JAM

DRAFT
NOT FOR CONSTRUCTION

FIGURE 5

R:\LAND PROJECTS\03-348_SYAR_Alexander_Valley\dwg\SHG-2007 ALEXANDER VALLEY-BANK PROTECTION FIGS.dwg 4/2/2008 11:39:47 AM PDT

RUSSIAN RIVER - ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

PHOTO FIGURES

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Photo 1: Riparian bench at downstream end of Bar S12.

Photo 2: Riparian bench near river station 245+00 with willow and cottonwood overstory.

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Photo 3: Example of a barb and embayment bank enhancement on the Middle Reach of the Russian River.

Photo 4: Note the barb has led to deposition of fine sediment in the embayment section.

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Photos 5 & 6: Examples of armored bank sections in Alexander Valley with established riparian vegetation.

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Photos 7 & 8: Example of a natural alcove at the downstream end of Bar S13.

RUSSIAN RIVER - ALEXANDER VALLEY
RIVER ENHANCEMENT PLAN

APPENDIX A

ALEXANDER VALLEY BANK EROSION RECONNAISSANCE-LEVEL ASSESSMENT

SITE ID: AV-L-1

Total Length: 600 ft	Upstream Station: 410+00	Downstream Station: 404+00
Erosion Rating:	High	
Bank Height:	15 feet	
Bank Material:	Disturbed gravel layer over native soils and gravel	
Vegetation Cover:	No vegetation, some roots. Top of bank has some oaks and annual grasslands	
Est. Bank Retreat between 2003-2007	170 ft	

SITE ID: AV-R-1

Total Length: 1100 ft	Upstream Station: 394+00	Downstream Station: 384+00
Erosion Rating:	600 ft moderate; 500 ft high	
Bank Height:	15 feet	
Bank Material:	Approximately 6 feet of native soils over gravel	
Vegetation Cover:	Some sporadic mulefat, grasses and Arundo on bank. Top of bank is dominated by Arundo and grasslands.	
Est. Bank Retreat between 2003-2007	300 ft	

SITE ID: AV-L-2

Total Length: 1,400 ft	Upstream Station: 372+00	Downstream Station: 358+00
Erosion Rating:	High	
Bank Height:	15 feet	
Bank Material:	Native soils	
Vegetation Cover:	Dense roots exposed, LWD on bank. Top of bank is mature cottonwood forest.	
Est. Bank Retreat between 2003-2007	220 ft	

SITE ID: AV-R-2

Total Length: 600 ft	Upstream Station: 336+00	Downstream Station: 330+00
Erosion Rating:	High to Moderate	
Bank Height:	15 feet	
Bank Material:	3 feet of native soil over gravel	
Vegetation Cover:	No cover on bank. Top of bank is vineyard.	
Est. Bank Retreat between 2003-2007	50 ft	

SITE ID: AV-L-3

Total Length: 1,500 ft	Upstream Station: 325+00	Downstream Station: 310+00
Erosion Rating:	Moderate	
Bank Height:	15 feet	
Bank Material:	Predominantly native soils	
Vegetation Cover:	Mostly Arundo. Large woody debris along bank. Top of bank is narrow corridor cottonwood forest backed up by vineyards.	
Est. Bank Retreat between 2003-2007	30 ft	

SITE ID: AV-R-3

Total Length: 2,350 ft	Upstream Station: 302+00	Downstream Station: 278+00
Erosion Rating:	2,100 ft high; 250 ft moderate	
Bank Height:	15 feet	
Bank Material:	3 to 5 feet of native soil over gravel	
Vegetation Cover:	Arundo treatment area, recent wildfire, dirt bike track on top of bank.	
Est. Bank Retreat between 2003-2007	150 ft @ RM 282; 80 ft @ RM 296	

SITE ID: AV-L-4

Total Length: 400 ft	Upstream Station: 172+00	Downstream Station: 168+00
Erosion Rating:	Moderate	
Bank Height:	12 feet	
Bank Material:	Native soil over gravel	
Vegetation Cover:	Arundo contributing to bank stability. Top of bank is narrow corridor cottonwood forest backed up by vineyards.	
Est. Bank Retreat between 2003-2007	90 ft	

SITE ID: AV-L-5

Total Length: 850 ft	Upstream Station: 70+00	Downstream Station: 62+00
Erosion Rating:	Moderate	
Bank Height:	12 feet	
Bank Material:	Native soil	
Vegetation Cover:	Cottonwood forest with Arundo understory at top of bank.	
Est. Bank Retreat between 2003-2007	120 ft	

SITE ID: AV-R-4

Total Length: 630 ft	Upstream Station: 49+00	Downstream Station: 43+00
Erosion Rating:	Moderate	
Bank Height:	12 feet	
Bank Material:	Native soil	
Vegetation Cover:	Cottonwood forest with Arundo understory at top of bank.	
Est. Bank Retreat between 2003-2007	45 ft	

SITE ID: AV-R-5

Total Length: 975 ft	Upstream Station: 15+00	Downstream Station: 6+00
Erosion Rating:	475 ft high; 500 ft moderate	
Bank Height:	12 feet	
Bank Material:	Native soil with some armoring in section adjoining the campground	
Vegetation Cover:	Arundo on top of bank in high erosion area. Mixed riparian forest around campground.	
Est. Bank Retreat between 2003-2007	100 ft	

APPENDIX E

SPILL PREVENTION FUELING AND LUBRICATION PLAN

SYAR INDUSTRIES, INC. – ALEXANDER VALLEY
SONOMA COUNTY, CALIFORNIA
SPILL PREVENTION FUELING AND LUBRICATION PLAN

A. Functions Performed

Equipment involved in skimming operations will be fueled in the field. Fueling will occur on the terraces, away from the River and the high bank.

B. Equipment Used

A fuel truck is used to supply equipment. Fueling will occur on the terraces, away from the River and the high bank.

C. Personnel Involved

1. Site safety officer – (To be assigned)
2. Fuel truck operator as trained by the site safety officer.

D. Emergency Equipment Available

1. Fire Extinguisher.
2. Shovel.
3. Broom.
4. Two bags of absorbent.
5. Empty 55 gallon drum for containing contaminated soil or absorbent.
6. Containment booms and absorbent pads.

E. Emergency Response to Spills or Releases

1. Ensure that all persons are protected from dangerous conditions.
2. Limit spill volume or area covered.
   (a). Use shovel to construct berms for containment.
   (b). Spread absorbent.
3. Contact the Plant Manager.
4. If help is needed, call 911 for response from the fire department.
5. If it is determined that the release could threaten human health or the environment, call the Sonoma County Department of Health Services at (707) 565-4700, the Office of Emergency Services at (800) 852-7550, and the fire department at 911.
6. Clean up contaminated soil, sample for laboratory testing, and place the soil in 55 gallon open-top drum until proper disposal procedures are determined based on laboratory analysis.

7. If petroleum spills into a waterway, use containment booms and call for a vacuum truck. In addition, notify the North Coast Regional Water Quality Control Board at (707) 576-2220.
8. The Plant Manager must prepare a report of activities occurring, determine the cause of the spill or release and make recommendations for preventing a future occurrence.

F. Employee Training

1. Fuel truck operator is trained on the employee practices listed below.
2. All employees on site to be trained in the use of spill clean-up equipment and fire extinguishers.
3. All employees on site to be trained in the use of communications equipment.
4. All employee training will be documented .

G. Employee Practices

1. Never leave hoses unattended.
2. Avoid spills and drips.
3. Inspect vehicles and all containers daily for leaks. Report any leaks to your supervisor immediately.
4. All fueling of mobile equipment will be performed on the terraces, set back from the high bank of the River.
5. Equipment maintenance will occur at the processing plant at Healdsburg.

APPENDIX F

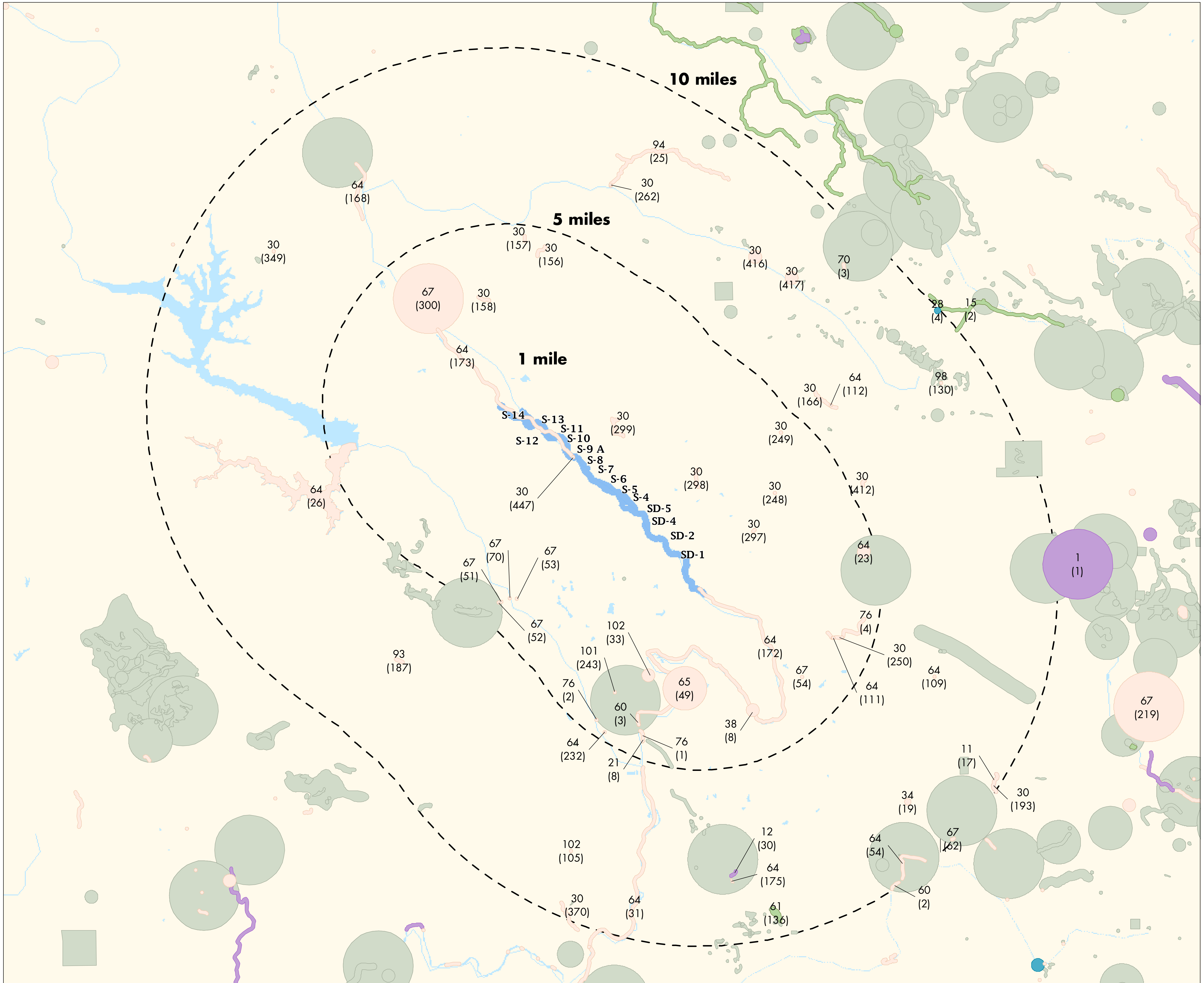
CNDDB TABLE AND MAPS

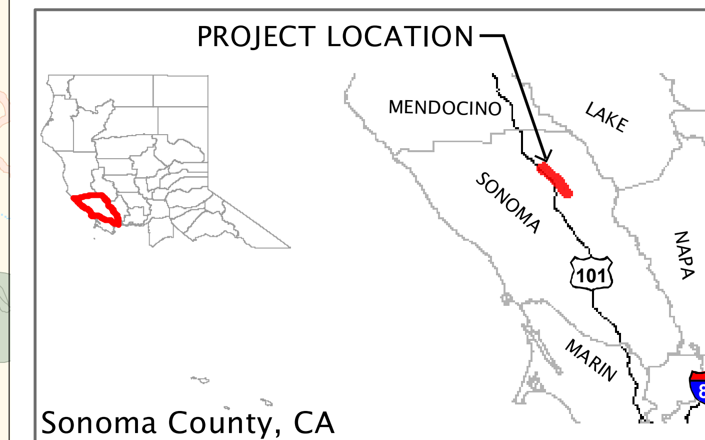
Syar Alexander Valley Instream Mining Project

Russian River Gravel Bar Skimming
Sonoma County California

EDAW | AECOM

May 2007





CNDDB Species

- Community
- Invertebrate Animal
- Non-vascular Plant
- Vascular Plant
- Vertebrate Animal

30 Species Code
(412) OCCNUMBER
see reverse for table

Gravel Bars
Russian River Course (May 2006)

0 2.5 5 Miles

Source: Syar Industires inc. EDAW, CNDDB April 2007
Projection State Plane NAD 1983 California II

List of all CNDDB Animals and Plants in 9 quads centered on Geyserville

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
1	Actinemys marmorata marmorata	northwestern pond turtle	ARAAD02031			G3G4T3	S3		SC
2	Allium peninsulare var. franciscanum	Franciscan onion	PMLIL021R1			G5T2	S2.2	1B.2	
3	Alopecurus aequalis var. sonomensis	Sonoma alopecurus	PMPOA07012	Endangered		G5T1Q	S1.1	1B.1	
4	Amorpha californica var. napensis	Napa false indigo	PDFAB08012			G4T2	S2.2	1B.2	
5	Antrozous pallidus	pallid bat	AMACC10010			G5	S3		SC
6	Arborimus pomo	Sonoma tree vole	AMAFF23030			G3	S3		SC
7	Arctostaphylos bakeri ssp. sublaevis	The Cedars manzanita	PDERI04222		Rare	G2T2	S2.2	1B.2	
8	Arctostaphylos canescens ssp. sonomensis	Sonoma canescent manzanita	PDERI04066			G3G4T2	S2.1	1B.2	
9	Arctostaphylos densiflora	Vine Hill manzanita	PDERI040C0		Endangered	G1	S1.1	1B.1	
10	Arctostaphylos manzanita ssp. elegans	Konocti manzanita	PDERI04271			G5T2	S2.3	1B.3	
11	Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	PDERI041G4			G3T1	S1.1	1B.1	
12	Ardea herodias	great blue heron	ABNGA04010			G5	S4		
13	Athene cunicularia	burrowing owl	ABNSB10010			G4	S2		SC
14	Blennosperma bakeri	Sonoma sunshine	PDAST1A010	Endangered	Endangered	G1	S1.2	1B.1	
15	Brodiaea californica var. leptandra	narrow-anthered California brodiaea	PMLIL0C022			G4?T2T3	S2S3.2	1B.2	
16	Calochortus raichei	The Cedars fairy-lantern	PMLIL0D1L0			G1	S1.2	1B.2	
17	Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	PDCON04032			G4T3	S3.2	4.2	
18	Carex comosa	bristly sedge	PMCYP032Y0			G5	S2?	2.1	
19	Ceanothus confusus	Rincon Ridge ceanothus	PDRHA04220			G2	S2.2	1B.1	
20	Ceanothus purpureus	holly-leaved ceanothus	PDRHA04160			G2	S2.2	1B.2	
21	Chlorogalum pomeridianum var. minus	dwarf soaproot	PMLIL0G042			G5T1	S1.2	1B.2	
22	Cordylanthus tenuis ssp. capillaris	Pennell's bird's-beak	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1.2	1B.2	
23	Cryptantha clevelandii var. dissita	serpentine cryptantha	PDBOR0A0H2			G5T1	S1.1	1B.1	
24	Dichanthelium lanuginosum var.	Geysers dichanthelium	PMPOA24025		Endangered	G5T1Q	S1.1	1B.1	
25	Downingia pusilla	dwarf downingia	PDCAM060C0			G3	S3.1	2.2	
26	Dubiraphia giulianii	Giuliani's dubiraphian riffle beetle	IICOL5A020			G1G3	S1S3		
27	Elanus leucurus	white-tailed kite	ABNKC06010			G5	S3		
28	Eriastrum brandegeeae	Brandegee's eriastrum	PDPLM03020			G3	S3.2	1B.2	
29	Erigeron greenei	Greene's narrow-leaved daisy	PDAST3M5G0			G2	S2	1B.2	
30	Erigeron serpentinus	serpentine daisy	PDAST3M5M0			G1	S1.3	1B.3	
31	Eriogonum nervulosum	Snow Mountain buckwheat	PDPGN08440			G2	S2.2	1B.2	

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
32	Fritillaria liliacea	fragrant fritillary	PMLIL0V0C0			G2	S2.2	1B.2	
33	Hemizonia congesta ssp. congesta	seaside tarplant	PDAST4R065			G5T2T3	S2S3	1B.2	
34	Hesperolinon adenophyllum	glandular western flax	PDLIN01010			G2	S2.3	1B.2	
35	Horkelia tenuiloba	thin-lobed horkelia	PDROS0W0E0			G2	S2.2	1B.2	
36	Hysterocarpus traski pomo	Russian River tule perch	AFCQK02011			G5T2	S2		SC
37	Lasiurus blossevillii	western red bat	AMACC05060			G5	S3?		SC
38	Lasiurus cinereus	hoary bat	AMACC05030			G5	S4?		
39	Lasthenia burkei	Burke's goldfields	PDAST5L010	Endangered	Endangered	G1	S1.1	1B.1	
40	Lavinia symmetricus navarroensis	Navarro roach	AFCJB19023			G5T1T2	S1S2		SC
41	Lavinia symmetricus parvipinnis	Gualala roach	AFCJB19025			G5T1T2	S1S2		SC
42	Layia septentrionalis	Colusa layia	PDAST5N0F0			G2	S2.2	1B.2	
43	Leptosiphon jepsonii	Jepson's leptosiphon	PDPLM09140			G2	S2.2	1B.2	
44	Limnanthes vinculans	Sebastopol meadowfoam	PDLIM02090	Endangered	Endangered	G2	S2.1	1B.1	
45	Linderiella occidentalis	California linderiella	ICBRA06010			G3	S2S3		
46	Lupinus sericatus	Cobb Mountain lupine	PDFAB2B3J0			G2	S2.2	1B.2	
47	Microseris paludosa	marsh microseris	PDAST6E0D0			G2	S2.2	1B.2	
48	Monardella villosa ssp. globosa	robust monardella	PDLAM180P7			G5T2	S2.2	1B.2	
49	Navarretia leucocephala ssp. bakeri	Baker's navarretia	PDPLM0C0E1			G4T2	S2.1	1B.1	
50	Navarretia leucocephala ssp. pauciflora	few-flowered navarretia	PDPLM0C0E4	Endangered	Threatened	G4T1	S1.1	1B.1	
51	Navarretia leucocephala ssp. plieantha	many-flowered navarretia	PDPLM0C0E5	Endangered	Endangered	G4T1	S1.2	1B.2	
52	Oncorhynchus kisutch	coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?		
53	Oncorhynchus mykiss irideus	steelhead - central California coast ESU	AFCHA0209G	Threatened		G5T2Q	S2		
54	Pandion haliaetus	osprey	ABNKC01010			G5	S3		
55	Piperia candida	white-flowered rein orchid	PMORC1X050			G3	S3.2	1B.2	
56	Progne subis	purple martin	ABPAU01010			G5	S3		SC
57	Rana boylii	foothill yellow-legged frog	AAABH01050			G3	S2S3		SC
58	Rana draytonii	California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3		SC
59	Sidalcea malviflora ssp. purpurea	purple-stemmed checkerbloom	PDMAL110FL			G5T2	S2.2	1B.2	
60	Sidalcea oregana ssp. hydrophila	marsh checkerbloom	PDMAL110K2			G5T2?	S2?	1B.2	
61	Streptanthus brachiatus ssp. brachiatus	Socrates Mine jewel-flower	PDBRA2G072			G2T1	S1.2	1B.2	
62	Streptanthus brachiatus ssp. hoffmanii	Freed's jewel-flower	PDBRA2G071			G2T1	S1.2	1B.2	
63	Streptanthus glandulosus var. hoffmanii	Hoffman's bristly jewel-flower	PDBRA2G0J4			G4TH	SH	1B.3	
64	Streptanthus morrisonii	see individual subspecies!	PDBRA2G0S0			G2	S2		

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
65	Syncaris pacifica	California freshwater shrimp	ICMAL27010	Endangered	Endangered	G1	S1		
66	Trifolium buckwestiorum	Santa Cruz clover	PDFAB402W0			G1	S1.1	1B.1	
67	Usnea longissima	long-beard lichen	NLLEC5P420			G4	S4.2		

APPENDIX G

TRAFFIC ANALYSIS

Photos of Access Points Along Extraction Routes

Photo 1 - Route 1 View from Alexander Valley Road Just East of Proposed Access Point

Photo 2 - Route 1 View at grade with Adjacent Point of Access

Photo 3 - View Towards Alexander Valley Road From Access Point

Photo 4 - Route 5 (Hamilton Lane at Geyserville Avenue

Photo 5 - Route 5 View From Hamilton Lane South Along Geyserville Avenue

Photo 6 - Route 5 View From Hamilton Lane North Along Geyserville Avenue

Photo 7 - Route 7 View Towards Geyserville Avenue From Access Road

Photo 8 - Route 7 View From Geyserville Avenue Towards Access Road

Photo 9 - Route 6 View From Geyserville Avenue Towards Access Road

Photo 10 - Route 6 View From Access Road Towards Geyserville Avenue

Photo 11 - Route 2 Intersection of Lytton Station Road and Hassett Lane

Photo 12 - Route 2 Hassett Lane Between Lytton Station Road and Oliver Road

Photo 13 - Route 2 Eastern End of Oliver Road Looking North

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Scenario Report

Scenario:	AM Peak Hour Existing
Command:	AM Peak Hour 2
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 2
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 2

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Scenario Report

Scenario:	PM Peak Hour Existing
Command:	PM Peak Hour 2
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 2
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 2

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Turning Movement Report
AM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	94	0	10	0	23	9	73	25	0	234
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	14	0	100	0	0	0	8	116	0	0	78	72	388
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	118	153	0	0	0	0	0	271
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	130	0	0	0	2	23	0	0	117	1	279
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	20	0	8	0	23	6	120	23	0	200
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Turning Movement Report
PM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	68	0	5	0	43	38	148	26	0	328
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	40	0	95	0	0	0	17	93	0	0	140	98	483
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	185	168	0	0	0	0	0	353
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	0	142	0	0	0	7	26	0	0	182	3	368
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	4	0	27	2	170	37	0	244
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312

AM Peak Hour Traffic 6-14-07 - No Project

Dowling Associates, Inc.

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	19	0	186	0	454	9	250	96	0	1014
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	2	137	0	0	0	254	224	0	0	342	19	983
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	15	1	280	0	414	15	79	130	0	934
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	0	196	0	0	0	250	169	0	0	357	18	999
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
AM Peak Hour 2

Volume Type	NB In	NB Out	NB Total	SB In	SB Out	SB Total	EB In	EB Out	EB Total	WB In	WB Out	WB Total	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	82	82	104	0	104	32	35	67	98	117	215	468
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	114	0	114	0	80	80	124	92	216	150	216	366	776
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	118	153	271	153	118	271	0	0	0	542
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	136	0	136	0	3	3	25	123	148	118	153	271	558
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	126	126	28	0	28	29	31	60	143	43	186	400
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
PM Peak Hour 2

Volume Type	NB In	NB Out	NB Total	SB In	SB Out	SB Total	EB In	EB Out	EB Total	WB In	WB Out	WB Total	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	186	186	73	0	73	81	31	112	174	111	285	656
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	135	0	115	115	110	180	290	238	188	426	966
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	185	168	353	168	185	353	0	0	0	706
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	150	0	150	0	10	10	33	190	223	185	168	353	736
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	172	172	8	0	8	29	41	70	207	31	238	488
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	259	259	205	0	205	463	282	745	346	473	819	2028
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	144	0	144	0	275	275	478	347	825	361	361	722	1966
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	95	95	296	0	296	429	410	839	209	429	638	1868
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	205	0	205	0	268	268	419	366	785	375	365	740	1998
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	10.5	0.000	B	10.5	0.000	+ 0.000 D/V
# 5 Highway 101 nb at Lytton Sprin	A	9.7	0.000	A	9.7	0.000	+ 0.000 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.7	0.000	B	10.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.7	0.000	A	9.7	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.5	0.000	A	9.5	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.4	0.150	A	7.4	0.150	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.8	0.000	B	11.8	0.000	+ 0.000 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.6	0.000	B	11.6	0.000	+ 0.000 D/V
# 31 Geyserville Avenue at Highway	A	8.3	0.217	A	8.3	0.217	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.5	0.151	A	7.5	0.151	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	11.6	0.000	B	11.6	0.000	+ 0.000 D/V

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	12.7	0.000	B	12.7	0.000	+ 0.000 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.8	0.000	B	10.8	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.2	0.000	A	9.2	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.6	0.000	A	9.6	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.169	A	7.7	0.169	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.4	0.000	B	11.4	0.000	+ 0.000 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.4	0.000	B	11.4	0.000	+ 0.000 D/V
# 31 Geyserville Avenue at Highway	A	8.9	0.317	A	8.9	0.317	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	8.4	0.258	A	8.4	0.258	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
Signal Warrant Summary Report

Intersection	Base Met	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

[Del / Vol]

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0
ApproachDel:	xxxxxx	10.5	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 43 38	148 26 0
ApproachDel:	xxxxxx	12.7	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0
Initial Vol:	0		0		0	94		0		10	0		23		9	73		25		0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0
Initial Vol:	0		0		0	68		0		5	0		43		38	148		26		0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	14	0	100	0	0	0	8	116	0	0	78	72
ApproachDel:	9.7			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	40	0	95	0	0	0	17	93	0	0	140	98
ApproachDel:	10.3			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	14		0		100	0		0		0	8		116		0	0		78		72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	40		0		95	0		0		0	17		90		0	0		140		98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	135 0 0	0 0 15	21 0 185	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.7	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	214 0 0	0 0 24	18 0 170	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.8	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L		T		R	L		T		R	L		T		R	L		T		R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	0	0	0	0	0	0	0	1	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	135		0		0	0		0		15	21		0		185	0		0		0

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L		T		R	L		T		R	L		T		R	L		T		R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	0	0	0	0	0	0	0	1	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	214		0		0	0		0		24	18				170	0		0		0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.0	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=153]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=271]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.1	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=168]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=353]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Dowling Associates, Inc.

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1
ApproachDel:	9.1	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3
ApproachDel:	9.2	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	0 20 7	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0
ApproachDel:	xxxxxx	10.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 21 2	170 37 0
ApproachDel:	xxxxxx	10.4	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	20	0	8	0	23	6	120	23	0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	4	0	4	0	21	2	170	37	0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	9.8

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.2

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

AM Peak Hour Traffic Assessment - 6-14-07 - No Project

Peak Hour Delay Signal Warrant Report

Dowling Associates, Inc.

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0
ApproachDel:	xxxxxx	9.7	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0
ApproachDel:	xxxxxx	9.8	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	75	0	6	0	22	31	17	48	0

Dowling Associates, Inc.

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	36	0	4	0	58	53	16	62	0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33
ApproachDel:	9.5			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	28	3	58	0	0	0	24	75	0	0	44	80
ApproachDel:	9.6			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 75 0	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	55 6 0	0 11 16	22 0 105	0 0 0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	93 28 0	0 18 27	17 0 84	0 0 0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0		0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0
ApproachDel:	xxxxxx	11.8	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	[illegible]	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 0 0411 0 15	79 130 0
ApproachDel:	xxxxxx	11.4	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1
Initial Vol:	5		2		137	0		0		0	254		224		0	0		342		19
ApproachDel:	11.6					xxxxxx					xxxxxx					xxxxxx				

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1
Initial Vol:	9		0		196	0		0		0	250		1160		0	0		357		18
ApproachDel:	11.4					xxxxxx					xxxxxx					xxxxxx				

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19

Dowling Associates, Inc.

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	9	0	196	0	0	0	250	169	0	0	357	18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Syar Mining Traffic Assessment

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Dowling Associates, Inc.

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	64	2	2	5	3	33	15	25	82	7	21	3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	0	1 0			0	0 0	1!	0 0
Initial Vol:	165	5	4	0	2	33	0	119	89	3	40	2

27

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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AM Peak Hour - 6-14-07 - No Project
Syar Mining Traffic Assessment
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	11.6	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	0 90 0	0 250 158
ApproachDel:	xxxxxx	13.1	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 90 0	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      7.0       Worst Case Level Of Service: B[ 10.5]
********************************************************************************
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    94    0    10     0   23     9    73   25     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    94    0    10     0   23     9    73   25     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    94    0    10     0   23     9    73   25     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   107    0    11     0   26    10    83   28     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   107    0    11     0   26    10    83   28     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   226  231    28  xxxx xxxx xxxxx    36 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   767  673  1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   735  636  1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 0.00  0.01  xxxx xxxx  xxxx  0.05 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.4 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   735 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.5 xxxx xxxxx xxxxx xxxx xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  10.7 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
Shared LOS:     *    *     *     B    *     *     *    *     *     A    *     *
ApproachDel:    xxxxxx            10.5           xxxxxx            xxxxxx
ApproachLOS:       *                B               *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      6.3       Worst Case Level Of Service: B[ 12.7]
********************************************************************************
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    68    0     5     0   43    38   148   26     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    68    0     5     0   43    38   148   26     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    68    0     5     0   43    38   148   26     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    77    0     6     0   49    43   168   30     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    77    0     6     0   49    43   168   30     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   436  458    30  xxxx xxxx xxxxx    92 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   581  502  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   527  441  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 0.00  0.01  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.4 xxxxx xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   527 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.5 xxxx xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  13.0 xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx
Shared LOS:     *    *     *     B    *     *     *    *     *     A    *     *
ApproachDel:    xxxxxx            12.7           xxxxxx            xxxxxx
ApproachLOS:       *                B               *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
                       Syar Mining Traffic Assessment
                   AM Peak Hour - 6-14-07 - No Project
                          Dowling Associates, Inc.
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      3.0       Worst Case Level Of Service: A[  9.7]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14    0   100     0    0     0     8  116     0     0   78    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    16    0   114     0    0     0     9  132     0     0   89    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   16    0   114     0    0     0     9  132     0     0   89    82
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  280  320   132  xxxx xxxx xxxxx   170 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  715  600   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    711  596   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.00  0.12  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  890 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.7 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.7           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
                       Syar Mining Traffic Assessment
                   PM Peak Hour - 6-14-07 - No Project
                          Dowling Associates, Inc.
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      3.2       Worst Case Level Of Service: B[ 10.3]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40    0    95     0    0     0    17   93     0     0  140    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    45    0   108     0    0     0    19  106     0     0  159   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   45    0   108     0    0     0    19  106     0     0  159   111
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  359  415   106  xxxx xxxx xxxxx   270 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  644  531   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    636  523   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.00  0.11  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  831 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.7 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.3 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:        10.3           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          B               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

2000 HCM Unsignalized Method (Future Volume Alternative)

Syar Mining Traffic Assessment

AM Peak Hour - 6-14-07 - No Project

Level Of Service Computation Report

Dowling Associates, Inc.

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.0 Worst Case Level Of Service: B[10.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	135	0	0	0	0	15	21	0	185	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	135	0	0	0	0	15	21	0	185	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	0	0	0	0	15	21	0	185	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	153	0	0	0	0	17	24	0	210	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	153	0	0	0	0	17	24	0	210	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	17	xxxx	xxxxx	xxxx	xxxx	xxxxx	307	307	0	xxxx	xxxx	xxxxx
Potent Cap.:	1613	xxxx	xxxxx	xxxx	xxxx	xxxxx	689	610	900	xxxx	xxxx	xxxxx
Move Cap.:	1613	xxxx	xxxxx	xxxx	xxxx	xxxxx	639	552	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.10	xxxx	xxxx	xxxx	xxxx	xxxx	0.04	0.00	0.23	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	864	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.7	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.7			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 8.6 Worst Case Level Of Service: B[10.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	214	0	0	0	0	24	18	0	170	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	214	0	0	0	0	24	18	0	170	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	214	0	0	0	0	24	18	0	170	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	243	0	0	0	0	27	20	0	193	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	243	0	0	0	0	27	20	0	193	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	27	xxxx	xxxxx	xxxx	xxxx	xxxxx	486	486	0	xxxx	xxxx	xxxxx
Potent Cap.:	1600	xxxx	xxxxx	xxxx	xxxx	xxxxx	544	484	900	xxxx	xxxx	xxxxx
Move Cap.:	1600	xxxx	xxxxx	xxxx	xxxx	xxxxx	480	411	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.15	xxxx	xxxx	xxxx	xxxx	xxxx	0.04	0.00	0.21	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	831	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.0	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.8	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.8			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

```
                     Syar Mining Traffic Assessment
                  AM Peak Hour - 6-14-07 - No Project
                       Dowling Associates, Inc.
-----------------------------------------------------------------------------
                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*****************************************************************************
Average Delay (sec/veh):      5.6       Worst Case Level Of Service: A[ 10.0]
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   118   153    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   118   153    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     0    0   118   153    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     0    0   134   174    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     0    0   134   174    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.19 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.7 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             10.0            xxxxxx
ApproachLOS:        *                *                 A                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



```
                     Syar Mining Traffic Assessment
                  PM Peak Hour - 6-14-07 - No Project
                       Dowling Associates, Inc.
-----------------------------------------------------------------------------
                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*****************************************************************************
Average Delay (sec/veh):      4.8       Worst Case Level Of Service: B[ 10.1]
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   185   168    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   185   168    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     0    0   185   168    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     0    0   210   191    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     0    0   210   191    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.21 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.8 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             10.1            xxxxxx
ApproachLOS:        *                *                 B                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```

```
AM Peak Hour Existing      Mon Dec 29, 2008 05:46:09            Page 11-1
------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                    AM Peak Hour - 6-14-07 - No Project
                          Dowling Associates, Inc.
------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
******************************************************************************
Average Delay (sec/veh):      4.5       Worst Case Level Of Service: A[  9.1]
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        6    0   130     0    0     0     2   23     0     0  117     1
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     6    0   130     0    0     0     2   23     0     0  117     1
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     6    0   130     0    0     0     2   23     0     0  117     1
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      7    0   148     0    0     0     2   26     0     0  133     1
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     7    0   148     0    0     0     2   26     0     0  133     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  164  165    26  xxxx xxxx xxxxx   134 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  831  731  1055  xxxx xxxx xxxxx  1463 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    830  730  1055  xxxx xxxx xxxxx  1463 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.14  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1043 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.1 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.1           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```



```
PM Peak Hour Existing      Mon Dec 29, 2008 05:46:21            Page 11-1
------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                    PM Peak Hour - 6-14-07 - No Project
                          Dowling Associates, Inc.
------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
******************************************************************************
Average Delay (sec/veh):      3.9       Worst Case Level Of Service: A[  9.2]
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        8    0   142     0    0     0     7   26     0     0  182     3
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    0   142     0    0     0     7   26     0     0  182     3
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     8    0   142     0    0     0     7   26     0     0  182     3
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      9    0   161     0    0     0     8   30     0     0  207     3
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9    0   161     0    0     0     8   30     0     0  207     3
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  254  256    30  xxxx xxxx xxxxx   210 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  739  652  1051  xxxx xxxx xxxxx  1372 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    736  648  1051  xxxx xxxx xxxxx  1372 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.15  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1027 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.2 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.2           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
---------------------------------------------------------------------------
                      Syar Mining Traffic Assessment
                   AM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
***************************************************************************
Average Delay (sec/veh):      5.9       Worst Case Level Of Service: B[ 10.3]
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    20    0     8     0   23     6   120   23     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0     8     0   23     6   120   23     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    20    0     8     0   23     6   120   23     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    23    0     9     0   26     7   136   26     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    23    0     9     0   26     7   136   26     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   328  332    26  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   670  591  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   623  536  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.04 0.00  0.01  xxxx xxxx  xxxx  0.09 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  705 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            10.3            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
                      Syar Mining Traffic Assessment
                   PM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
***************************************************************************
Average Delay (sec/veh):      5.6       Worst Case Level Of Service: B[ 10.4]
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0     4    0     4     0   27     2   170   37     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     4    0     4     0   27     2   170   37     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     4    0     4     0   27     2   170   37     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     5    0     5     0   31     2   193   42     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     5    0     5     0   31     2   193   42     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   460  461    42  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   563  500  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   504  432  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  xxxx xxxx  xxxx  0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  678 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.4 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            10.4            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

```
2000 HCM Unsignalized Method (Future Volume Alternative)
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Level Of Service Computation Report
Dowling Associates, Inc.
*******************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*******************************************************************************
Average Delay (sec/veh):      0.7       Worst Case Level Of Service: A[  9.8]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  153     0     0  118     0     0     0     0    10     0    10
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0  153     0     0  118     0     0     0     0    10     0    10
Added Vol:       0    0     0     0    0     0     0     0     0     0     0     0
PasserByVol:     0    0     0     0    0     0     0     0     0     0     0     0
Initial Fut:     0  153     0     0  118     0     0     0     0    10     0    10
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0  174     0     0  134     0     0     0     0    11     0    11
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
FinalVolume:     0  174     0     0  134     0     0     0     0    11     0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   308  308   174
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   688  609   875
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   688  609   875
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  770 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  9.8 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    A     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx             9.8
ApproachLOS:        *                *                *                A
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
                     Syar Mining Traffic Assessment
                  PM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
-------------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*******************************************************************************
Average Delay (sec/veh):      0.5       Worst Case Level Of Service: B[ 10.2]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  168     0     0  185     0     0     0     0    10     0    10
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0  168     0     0  185     0     0     0     0    10     0    10
Added Vol:       0    0     0     0    0     0     0     0     0     0     0     0
PasserByVol:     0    0     0     0    0     0     0     0     0     0     0     0
Initial Fut:     0  168     0     0  185     0     0     0     0    10     0    10
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0  191     0     0  210     0     0     0     0    11     0    11
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
FinalVolume:     0  191     0     0  210     0     0     0     0    11     0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   401  401   191
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  712 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.2 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            10.2
ApproachLOS:        *                *                *                B
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
2000 HCM Unsignalized Method (Future Volume Alternative)
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Level Of Service Computation Report
Dowling Associates, Inc.
-------------------------------------------------------------------------------
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      4.6       Worst Case Level Of Service: A[  9.7]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0    0    75    0    6     0   22   31    17   48    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0    0    75    0    6     0   22   31    17   48    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    75    0    6     0   22   31    17   48    0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0    0    85    0    7     0   25   35    19   55    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    85    0    7     0   25   35    19   55    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   136  153    55  xxxx xxxx xxxxx    60 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   862  742  1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   854  733  1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.10 0.00  0.01  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  865 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.7 xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
Shared LOS:     *    *    *     *    A    *     *    *    *     A    *    *
ApproachDel:    xxxxxx             9.7           xxxxxx           xxxxxx
ApproachLOS:       *                A               *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
                     Syar Mining Traffic Assessment
                 PM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      2.2       Worst Case Level Of Service: A[  9.8]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0    36    0    4     0   58   53    16   62    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0    0    36    0    4     0   58   53    16   62    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    36    0    4     0   58   53    16   62    0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0    0    41    0    5     0   66   60    18   70    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    41    0    5     0   66   60    18   70    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   203  233    70  xxxx xxxx xxxxx   126 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   790  671   998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   783  662   998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.05 0.00  0.00  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  800 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.8 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *    *     *    A    *     *    *    *     A    *    *
ApproachDel:    xxxxxx             9.8           xxxxxx           xxxxxx
ApproachLOS:       *                A               *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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-------------------------------------------------------------------------------
                       Syar Mining Traffic Assessment
                   AM Peak Hour - 6-14-07 - No Project
                         Dowling Associates, Inc.
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      3.0      Worst Case Level Of Service: A[  9.5]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      29    0    40    0    0     0   13   93     0    0   42    33
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   29    0    40    0    0     0   13   93     0    0   42    33
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   29    0    40    0    0     0   13   93     0    0   42    33
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:    33    0    45    0    0     0   15  106     0    0   48    38
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   33    0    45    0    0     0   15  106     0    0   48    38
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  202  220   106  xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  791  682   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    785  675   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.05  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *    *    *     *    A    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  875 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *    *    *     *    A    *     *    *    *     *
ApproachDel:         9.5           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                       Syar Mining Traffic Assessment
                   PM Peak Hour - 6-14-07 - No Project
                         Dowling Associates, Inc.
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      3.3      Worst Case Level Of Service: A[  9.6]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      28    3    58    0    0     0   24   75     0    0   44    80
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   28    3    58    0    0     0   24   75     0    0   44    80
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   28    3    58    0    0     0   24   75     0    0   44    80
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:    32    3    66    0    0     0   27   85     0    0   50    91
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   32    3    66    0    0     0   27   85     0    0   50    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  235  281    85  xxxx xxxx xxxxx   141 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  757  631   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    746  619   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.01  0.07  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *    *    *     *    A    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  876 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *    *    *     *    A    *     *    *    *     *
ApproachDel:         9.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.150
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.4
Optimal Cycle: 0 Level Of Service: A

2000 HCM 4-Way Stop Method (Future Volume Alternative)

AM Peak Hour - 6-14-07 - No Project

Level Of Service Computation Report

Dowling Associates, Inc.

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	63	7	0	0	13	18	25	0	119	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	63	7	0	0	13	18	25	0	119	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	63	7	0	0	13	18	25	0	119	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	xxxx	0.83	0.00	0.00	0.00
Final Sat.:	720	79	0	0	364	529	167	0	798	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	xxxx	xxxx	0.03	0.03	0.15	0.00	0.15	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:	7.8			7.0			7.3			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	7.8			7.0			7.3			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.169
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.7
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	28	0	0	18	27	17	0	84	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	106	32	0	0	20	31	19	0	95	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	32	0	0	20	31	19	0	95	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	106	32	0	0	20	31	19	0	95	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.17	0.00	0.83	0.00	0.00	0.00
Final Sat.:	625	188	0	0	357	536	152	0	753	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	xxxx	xxxx	0.06	0.06	0.13	xxxx	0.13	xxxx	xxxx	xxxx
Crit Moves:		****				****	****					
Delay/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	*	A	*	*	*
ApproachDel:	8.2			7.1			7.4			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	8.2			7.1			7.4			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28     0     0   27     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28     0     0   27     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   28     0     0   27     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   32     0     0   31     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   32     0     0   31     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx    63   63    32
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:       *                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45     0     0   45     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45     0     0   45     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   45     0     0   45     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   51     0     0   51     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   51     0     0   51     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   102  102    51
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:       *                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	32	0	0	31	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	32	0	0	31	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	51	0	0	51	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	51	0	0	51	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):      4.8       Worst Case Level Of Service: B[ 11.8]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    19    0   186     0  454     9   250   96     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    19    0   186     0  454     9   250   96     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    19    0   186     0  454     9   250   96     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    22    0   211     0  516    10   284  109     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    22    0   211     0  516    10   284  109     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1198 1203   109  xxxx xxxx xxxxx   526 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   207  186   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   164  136   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.13 0.00  0.22  xxxx xxxx  xxxx  0.27 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.9  xxxx xxxx xxxxx   1.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.9 xxxxx xxxx xxxxx   9.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   164 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  30.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     D    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx            11.8            xxxxxx           xxxxxx
ApproachLOS:      *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):      4.3       Worst Case Level Of Service: B[ 11.4]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    15    1   280     0  414    15    79  130     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    15    1   280     0  414    15    79  130     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    15    1   280     0  414    15    79  130     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    17    1   318     0  470    17    90  148     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    17    1   318     0  470    17    90  148     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   806  815   148  xxxx xxxx xxxxx   488 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   354  314   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   332  288   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.05 0.00  0.35  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.6  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  11.1 xxxxx xxxx xxxxx   8.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   328 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  16.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx            11.4            xxxxxx           xxxxxx
ApproachLOS:      *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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-------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                    AM Peak Hour - 6-14-07 - No Project
                           Dowling Associates, Inc.
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
********************************************************************************
Average Delay (sec/veh):      4.1       Worst Case Level Of Service: B[ 11.6]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       5    2   137     0    0     0   254  224     0     0  342    19
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    2   137     0    0     0   254  224     0     0  342    19
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5    2   137     0    0     0   254  224     0     0  342    19
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     6    2   156     0    0     0   289  255     0     0  389    22
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    6    2   156     0    0     0   289  255     0     0  389    22
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1231 1242   255  xxxx xxxx xxxxx   410 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  198  176   789  xxxx xxxx xxxxx  1160 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    160  132   789  xxxx xxxx xxxxx  1160 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.02  0.20  xxxx xxxx  xxxx  0.25 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   0.7  xxxx xxxx xxxxx   1.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  10.7 xxxxx xxxx xxxxx   9.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:  151 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 30.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     D    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      11.6            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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-------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                    PM Peak Hour - 6-14-07 - No Project
                           Dowling Associates, Inc.
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
********************************************************************************
Average Delay (sec/veh):      4.6       Worst Case Level Of Service: B[ 11.4]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       9    0   196     0    0     0   250  169     0     0  357    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9    0   196     0    0     0   250  169     0     0  357    18
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    0   196     0    0     0   250  169     0     0  357    18
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    10    0   223     0    0     0   284  192     0     0  406    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   10    0   223     0    0     0   284  192     0     0  406    20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1176 1186   192  xxxx xxxx xxxxx   426 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  213  190   855  xxxx xxxx xxxxx  1144 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    172  143   855  xxxx xxxx xxxxx  1144 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.00  0.26  xxxx xxxx  xxxx  0.25 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   1.0  xxxx xxxx xxxxx   1.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  10.7 xxxxx xxxx xxxxx   9.2 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:  172 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 27.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     D    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      11.4            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.217
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.3
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	55	83	78	91	0	0	0	0	90	0	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	55	83	78	91	0	0	0	0	90	0	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	55	83	78	91	0	0	0	0	90	0	63
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	339	515	362	420	0	0	0	0	458	0	319
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.16	0.16	0.22	0.22	xxxx	xxxx	xxxx	xxxx	0.20	xxxx	0.20
Crit Moves:		****		****								****
Delay/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:		7.8			8.7			xxxxxx			8.4	
Delay Adj:		1.00			1.00			xxxxx			1.00	
ApprAdjDel:		7.8			8.7			xxxxxx			8.4	
LOS by Appr:		A			A			*			A	
AllWayAvgQ:	0.2	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.317
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	88	86	63	76	0	0	0	0	127	0	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	88	86	63	76	0	0	0	0	127	0	122
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	88	86	63	76	0	0	0	0	127	0	122
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	400	394	327	399	0	0	0	0	401	0	384
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.19	0.19	xxxx	xxxx	xxxx	xxxx	0.32	xxxx	0.32
Crit Moves:		****			****					****		
Delay/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:		8.5			8.8			xxxxxx			9.3	
Delay Adj:		1.00			1.00			xxxxx			1.00	
ApprAdjDel:		8.5			8.8			xxxxxx			9.3	
LOS by Appr:		A			A			*			A	
AllWayAvgQ:	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.4	0.4	0.4

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.151
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.5
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	73	2	2	6	3	38	17	28	93	8	24	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	2	2	6	3	38	17	28	93	8	24	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	73	2	2	6	3	38	17	28	93	8	24	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	733	23	23	109	65	717	113	188	616	184	552	79
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.05	0.05	0.05	0.15	0.15	0.15	0.04	0.04	0.04
Crit Moves:		****				****		****			****	
Delay/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		7.9			7.1			7.5			7.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		7.9			7.1			7.5			7.5	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.258
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.4
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33	27	19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	27	19	89	3	40	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	188	6	5	0	2	38	31	22	101	3	45	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	6	5	0	2	38	31	22	101	3	45	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	6	5	0	2	38	31	22	101	3	45	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20	0.14	0.66	0.07	0.89	0.04
Final Sat.:	726	22	18	0	49	803	166	117	548	50	662	33
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.26	xxxx	0.05	0.05	0.18	0.18	0.18	0.07	0.07	0.07
Crit Moves:		****				****	****				****	
Delay/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
LOS by Move:	A	A	A	*	A	A	A	A	A	A	A	A
ApproachDel:		9.1			7.2			8.0			7.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.1			7.2			8.0			7.9	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
********************************************************************************
Average Delay (sec/veh):      2.9       Worst Case Level Of Service: B[ 11.6]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include           Include
Lanes:        0  0  0  0  0   1  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0     0  104    0     0    4  116     0     0  132    77
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0  104    0     0    4  116     0     0  132    77
Added Vol:       0    0     0    0    0     0    0    0     0     0    0     0
PasserByVol:     0    0     0    0    0     0    0    0     0     0    0     0
Initial Fut:     0    0     0  104    0     0    4  116     0     0  132    77
User Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0  118    0     0    5  132     0     0  150    88
Reduct Vol:      0    0     0    0    0     0    0    0     0     0    0     0
FinalVolume:     0    0     0  118    0     0    5  132     0     0  150    88
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   335 xxxx xxxxx   238 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   665 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   663 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.18 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.6 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  11.6 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *    B    *     *    A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *    *    *     *    A    *     *     *    *     *
ApproachDel:     xxxxxx            11.6            xxxxxx            xxxxxx
ApproachLOS:        *                B                *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
                     Syar Mining Traffic Assessment
                   PM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
********************************************************************************
Average Delay (sec/veh):      2.0       Worst Case Level Of Service: B[ 13.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include           Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0     0   82    0     5    5   92     0     0  250   158
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0   82    0     5    5   92     0     0  250   158
Added Vol:       0    0     0    0    0     0    0    0     0     0    0     0
PasserByVol:     0    0     0    0    0     0    0    0     0     0    0     0
Initial Fut:     0    0     0   82    0     5    5   92     0     0  250   158
User Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   93    0     6    6  105     0     0  284   180
Reduct Vol:      0    0     0    0    0     0    0    0     0     0    0     0
FinalVolume:     0    0     0   93    0     6    6  105     0     0  284   180
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   490  490   374   464 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   541  482   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   539  479   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.17 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *    *    *     *    A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  545 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.7 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 13.1 xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *    *    B     *    A    *     *     *    *     *
ApproachDel:     xxxxxx            13.1            xxxxxx            xxxxxx
ApproachLOS:        *                B                *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Scenario: AM Peak Hour 2

Command: AM Peak Hour 2
Volume: AM Peak Hour
Geometry: Existing
Impact Fee: Default Impact Fee
Trip Generation: AM Peak Hour 2
Trip Distribution: Syar Mining
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Paths: Default Path
Routes: Default Route
Configuration: AM Peak Hour 2

Dowling Associates, Inc.

Scenario Report

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Scenario Report

Scenario: PM Peak Hour 2

Command: PM Peak Hour 2
Volume: PM Peak Hour
Geometry: Existing
Impact Fee: Default Impact Fee
Trip Generation: PM Peak Hour 2
Trip Distribution: Syar Mining
Paths: Default Path
Routes: Default Route
Configuration: PM Peak Hour 2

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Generation Report

Forecast for AM Peak Hour 2

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2	Route 2	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
2	Route 2	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
	Zone 2 Subtotal					84	66	150	100.0
3	Route 3	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
3	Route 3	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
4	Route 4	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
4	Route 4	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
5	Route 5	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
5	Route 5	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
678	Route 6,7,8	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
678	Route 6,7,8	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
TOTAL						84	66	150	100.0

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Generation Report

Forecast for PM Peak Hour 2

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2	Route 2	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
2	Route 2	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
	Zone 2 Subtotal					66	84	150	100.0
3	Route 3	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
3	Route 3	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
4	Route 4	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
4	Route 4	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
5	Route 5	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
5	Route 5	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
678	Route 6,7,8	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
678	Route 6,7,8	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
TOTAL						66	84	150	100.0

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Turning Movement Report
AM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	94	0	10	0	23	9	139	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	14	0	184	0	0	0	8	116	0	0	144	72	538
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	135	0	0	0	0	81	105	0	185	0	0	0	506
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	118	153	0	0	0	0	0	271
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	130	0	0	0	2	23	0	0	117	1	279
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	20	0	8	0	23	6	120	23	0	200
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Turning Movement Report
PM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	68	0	5	0	43	38	232	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	40	0	161	0	0	0	17	93	0	0	224	98	633
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	214	0	0	0	0	108	84	0	170	0	0	0	576
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	185	168	0	0	0	0	0	353
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	0	142	0	0	0	7	26	0	0	182	3	368
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	4	0	27	2	170	37	0	244
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312

AM Peak Hour Traffic 6-14-07 - No Project
Dowling Associates, Inc.

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
AM Peak Hour 2

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	148	148	104	0	104	32	35	67	164	117	281	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	198	0	198	0	80	80	124	158	282	216	300	516	1076
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	135	185	320	81	105	186	290	216	506	0	0	0	1012
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	118	153	271	153	118	271	0	0	0	542
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	136	0	136	0	3	3	25	123	148	118	153	271	558
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	126	126	28	0	28	29	31	60	143	43	186	400
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
PM Peak Hour 2

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	270	270	73	0	73	81	31	112	258	111	369	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	201	0	201	0	115	115	110	264	374	322	254	576	1266
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	214	170	384	108	84	192	254	322	576	0	0	0	1152
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	185	168	353	168	185	353	0	0	0	706
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	150	0	150	0	10	10	33	190	223	185	168	353	736
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	172	172	8	0	8	29	41	70	207	31	238	488
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624

AM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	10.5	0.000	B	12.2	0.000	+ 1.735 D/V
# 5 Highway 101 nb at Lytton Sprin	A	9.7	0.000	B	10.4	0.000	+ 0.633 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.7	0.000	B	12.9	0.000	+ 2.200 D/V
# 12 Geyserville Avenue at Banti La	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.7	0.000	A	9.7	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.5	0.000	A	9.5	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.4	0.150	A	7.4	0.150	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.8	0.000	C	23.9	0.000	+12.116 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.6	0.000	B	12.6	0.000	+ 1.012 D/V
# 31 Geyserville Avenue at Highway	A	8.3	0.217	A	8.3	0.217	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.5	0.151	A	7.5	0.151	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	11.6	0.000	B	11.6	0.000	+ 0.000 D/V

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	12.7	0.000	C	16.3	0.000	+ 3.608 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.3	0.000	B	10.9	0.000	+ 0.598 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.8	0.000	B	13.8	0.000	+ 2.991 D/V
# 12 Geyserville Avenue at Banti La	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.2	0.000	A	9.2	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.6	0.000	A	9.6	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.169	A	7.7	0.169	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.4	0.000	B	13.8	0.000	+ 2.422 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.4	0.000	B	12.6	0.000	+ 1.231 D/V
# 31 Geyserville Avenue at Highway	A	8.9	0.317	A	8.9	0.317	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	8.4	0.258	A	8.4	0.258	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
Signal Warrant Summary Report

Intersection	Base Met	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Aveynue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

[Del / Vol]

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

AM Peak Hour Traffic Assessment - No Project

Peak Hour Delay Signal Warrant Report

Dowling Associates, Inc.

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0
ApproachDel:	xxxxxx	10.5	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #2: [approach volume=104]

FAIL - Approach volume less than 150 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=234]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 41 38	148 26 0
ApproachDel:	xxxxxx	12.7	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #2: [approach volume=73]

FAIL - Approach volume less than 150 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=328]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 43 38	148 26 0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72
ApproachDel:	9.7	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	0 90 0	0 140 98
ApproachDel:	10.3	xxxxxx	xxxxxx	xxxxxx

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Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	14		0		100	0		0		0	8		116		0	0		78		72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	40		0		95	0		0		0	90		17			0		140		98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	135 0 0	0 0 15	21 0 185	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.7	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	214 0 0	0 0 24	18 0 170	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.8	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0

Dowling Associates, Inc.

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.0	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=153]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=271]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.1	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=168]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=353]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Syar Mining Traffic Assessment

Dowling Associates, Inc.

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	0 0	1	1 0	0 0	0	0 0	0 0	0
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	0 0	1	1 0	0 0	0	0 0	0 0	0
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	6	0	130	0	0	0	2	23	0	0	117	1
ApproachDel:	9.1			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	8	0	142	0	0	0	7	26	0	0	182	3
ApproachDel:	9.2			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	0 20 7	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0
ApproachDel:	xxxxxx	10.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 27 2	170 37 0
ApproachDel:	xxxxxx	10.4	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
Peak Hour Volume Signal Warrant Report [Urban]
Dowling Associates, Inc.

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 21 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	9.8

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.2

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Dowling Associates, Inc.

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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AM Peak Hour Traffic Assessment

AM Peak Hour - 6-14-07 - No Project

Peak Hour Delay Signal Warrant Report

Dowling Associates, Inc.

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0
ApproachDel:	xxxxxx	9.7	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=81]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=199]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0
ApproachDel:	xxxxxx	9.8	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=40]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=229]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Syar Mining Traffic Assessment ... Project

Dowling Associates, Inc.

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 0 58 0 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.
```

```
-----------------------------------------------------------------------------
*****************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
Initial Vol:    29    0   40     0    0     0    13   93     0     0   42    33
ApproachDel:        9.5           xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.
-----------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
```

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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```
-----------------------------------------------------------------------------
Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
-----------------------------------------------------------------------------
Peak Hour Delay Signal Warrant Report
*****************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
Initial Vol:    28    3   58     0    0     0    24   76     0     0   44    80
ApproachDel:        9.6           xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-----------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
```

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	28	3	58	0	0	0	24	75	0	0	44	80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Stop Sign					Stop Sign				
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	55		6		0	0		11		16	22		0		105	0		0		0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Stop Sign					Stop Sign				
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	93		28		0	0		18		27	17		0		84	0		0		0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Initial Vol:	0	28	0	0	27	0	0	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Initial Vol:	0	45	0	0	45	0	0	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	28	0	0	27	0	0	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	45	0	0	45	0	0	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Dowling Associates, Inc.

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0
ApproachDel:	xxxxxx	11.8	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 411 15	79 130 0
ApproachDel:	xxxxxx	11.4	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
Peak Hour Volume Signal Warrant Report [Urban]
Dowling Associates, Inc.

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0414 0 15	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19
ApproachDel:	11.6	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 169 0	0 357 18
ApproachDel:	11.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1 0	0	1	0 0 0	0	0	1 0 1	0	0	0 0 1	0	1
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1 0	0	1	0 0 0	0	0	1 0 1	0	0	0 0 1	0	1
Initial Vol:	9	0	196	0	0	0	250	169	0	0	357	18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Stop Sign					Stop Sign				
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	64		2		2	5		3		33	15		25		82	7		21		3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Stop Sign					Stop Sign				
Lanes:	0	0	1!	0	0	0	0	0	1	0	[illegible]				0	0	0	1!	0	0
Initial Vol:	165		5		4	0		2		33	[illegible]		[illegible]		89	3		40		2

27

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			1 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	104	0	0	4	116	0	0	132	77
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	82	0	5	5	92	0	0	250	158
ApproachDel:	xxxxxx			13.1			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	0		0		0	104		0		0	4		116		0	0		132		77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	0	1!	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	0		0		0	82		0		5	5		92		0	0		250		158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
2000 HCM Unsignalized Method (Future Volume Alternative)
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Level Of Service Computation Report
Dowling Associates, Inc.
-------------------------------------------------------------------------------
*******************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      7.7      Worst Case Level Of Service: B[ 12.2]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    94    0    10     0   23     9    73   25     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    94    0    10     0   23     9    73   25     0
Added Vol:      0    0     0     0    0     0     0    0     0    66    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    94    0    10     0   23     9   139   25     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   107    0    11     0   26    10   158   28     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   107    0    11     0   26    10   158   28     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   376  381    28  xxxx xxxx xxxxx    36 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   630  555  1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   577  495  1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.19 0.00  0.01  xxxx xxxx  xxxx  0.10 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   577 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.7 xxxx xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  12.6 xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *     *     B    *     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            12.2            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                       Syar Mining Traffic Assessment
                   PM Peak Hour - 6-14-07 - No Project
                          Dowling Associates, Inc.
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      7.3      Worst Case Level Of Service: C[ 16.3]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    68    0     5     0   43    38   148   26     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    68    0     5     0   43    38   148   26     0
Added Vol:      0    0     0     0    0     0     0    0     0    84    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    68    0     5     0   43    38   232   26     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    77    0     6     0   49    43   264   30     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    77    0     6     0   49    43   264   30     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   627  649    30  xxxx xxxx xxxxx    92 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   450  391  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   380  312  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.20 0.00  0.01  xxxx xxxx  xxxx  0.17 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.6 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.4 xxxxx xxxx xxxxx   7.9 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   380 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.8 xxxx xxxxx xxxxx xxxx xxxxx   0.6 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  16.9 xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            16.3            xxxxxx           xxxxxx
ApproachLOS:        *                C                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      3.9       Worst Case Level Of Service: B[ 10.4]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0    0    84     0    0     0     0    0     0     0   66     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14    0   184     0    0     0     8  116     0     0  144    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    16    0   209     0    0     0     9  132     0     0  164    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   16    0   209     0    0     0     9  132     0     0  164    82
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  355  395   132  xxxx xxxx xxxxx   245 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  647  545   923  xxxx xxxx xxxxx  1332 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    644  541   923  xxxx xxxx xxxxx  1332 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.00  0.23  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  896 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.0 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.4 xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      10.4           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```


Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      3.7       Worst Case Level Of Service: B[ 10.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0    0    66     0    0     0     0    0     0     0   84     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40    0   161     0    0     0    17   93     0     0  224    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    45    0   183     0    0     0    19  106     0     0  255   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   45    0   183     0    0     0    19  106     0     0  255   111
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  455  510   106  xxxx xxxx xxxxx   366 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  567  469   954  xxxx xxxx xxxxx  1204 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    560  462   954  xxxx xxxx xxxxx  1204 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.08 0.00  0.19  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  837 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.1 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.9 xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      10.9           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.4 Worst Case Level Of Service: B[12.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	135	0	0	0	0	15	21	0	185	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	135	0	0	0	0	15	21	0	185	0	0	0
Added Vol:	0	0	0	0	0	66	84	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	0	0	0	0	81	105	0	185	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	153	0	0	0	0	92	119	0	210	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	153	0	0	0	0	92	119	0	210	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	92	xxxx	xxxxx	xxxx	xxxx	xxxxx	307	307	0	xxxx	xxxx	xxxxx
Potent Cap.:	1515	xxxx	xxxxx	xxxx	xxxx	xxxxx	689	610	900	xxxx	xxxx	xxxxx
Move Cap.:	1515	xxxx	xxxxx	xxxx	xxxx	xxxxx	636	549	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.10	xxxx	xxxx	xxxx	xxxx	xxxx	0.19	0.00	0.23	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	782	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.1	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.9	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			12.9			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.0 Worst Case Level Of Service: B[13.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	214	0	0	0	0	24	18	0	170	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	214	0	0	0	0	24	18	0	170	0	0	0
Added Vol:	0	0	0	0	0	84	66	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	214	0	0	0	0	108	84	0	170	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	243	0	0	0	0	123	95	0	193	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	243	0	0	0	0	123	95	0	193	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	123	xxxx	xxxxx	xxxx	xxxx	xxxxx	486	486	0	xxxx	xxxx	xxxxx
Potent Cap.:	1477	xxxx	xxxxx	xxxx	xxxx	xxxxx	544	484	900	xxxx	xxxx	xxxxx
Move Cap.:	1477	xxxx	xxxxx	xxxx	xxxx	xxxxx	475	404	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.16	xxxx	xxxx	xxxx	xxxx	xxxx	0.20	0.00	0.21	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	394	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.1	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.8	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			13.8			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                      AM Peak Hour - 6-14-07 - No Project
                           Dowling Associates, Inc.
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
********************************************************************************
Average Delay (sec/veh):      5.6      Worst Case Level Of Service: A[ 10.0]
********************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign       Stop Sign
Rights:          Include          Include          Include         Include
Lanes:       0  0  0  0  0   0  0  0  0  1   1  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0    0     0     0    0   118   153    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0     0    0   118   153    0     0     0    0     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0     0    0   118   153    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0     0    0   134   174    0     0     0    0     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0     0    0   134   174    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.19 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.7 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             10.0            xxxxxx
ApproachLOS:       *                *                 A                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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-------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                      PM Peak Hour - 6-14-07 - No Project
                           Dowling Associates, Inc.
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
********************************************************************************
Average Delay (sec/veh):      4.8      Worst Case Level Of Service: B[ 10.1]
********************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign       Stop Sign
Rights:          Include          Include          Include         Include
Lanes:       0  0  1! 0  0   0  0  0  0  1   1  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0    0     0     0    0   185   168    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0     0    0   185   168    0     0     0    0     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0     0    0   185   168    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0     0    0   210   191    0     0     0    0     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0     0    0   210   191    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.21 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.8 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     B    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             10.1            xxxxxx
ApproachLOS:       *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      4.5       Worst Case Level Of Service: A[  9.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        6    0   130     0    0     0     2   23     0     0  117     1
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     6    0   130     0    0     0     2   23     0     0  117     1
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     6    0   130     0    0     0     2   23     0     0  117     1
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      7    0   148     0    0     0     2   26     0     0  133     1
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     7    0   148     0    0     0     2   26     0     0  133     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  164  165    26  xxxx xxxx xxxxx   134 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  831  731  1055  xxxx xxxx xxxxx  1463 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    830  730  1055  xxxx xxxx xxxxx  1463 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.14  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1043 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.1 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.1            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      3.9       Worst Case Level Of Service: A[  9.2]
********************************************************************************
Approach:      North Bound      South Bound                        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R                     L  -  T  -  R
------------|---------------||---------------|East Bound --R---||---------------|
Control:       Stop Sign        Stop Sign                        Uncontrolled
Rights:          Include          Include                          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   Uncontrolled      0  0  0  1  0
------------|---------------||---------------|0--1--0--0--0--||---------------|
Volume Module: >> Count Date: 17 May 2007 <<  Include
Base Vol:        8    0   142     0    0     0        26     0     0  182     3
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00 1.00  1.00 1.00  1.00
Initial Bse:     8    0   142     0    0     0  7     26     0     0  182     3
Added Vol:       0    0     0     0    0     0        0      0     0    0     0
PasserByVol:     0    0     0     0    0     0  7     0      0     0    0     0
Initial Fut:     8    0   142     0    0     0  0     26     0     0  182     3
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00 1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88 0.88  0.88 0.88  0.88
PHF Volume:      9    0   161     0    0     0        30     0     0  207     3
Reduct Vol:      0    0     0     0    0     0        0      0     0    0     0
FinalVolume:     9    0   161     0    0     0  8     30     0     0  207     3
------------|---------------||---------------|0--------------||---------------|
Critical Gap Module:                          8
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx 4.1 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------|2.2-xxxx-xxxxx-xxxxx-xxxx-xxxxx--|
Capacity Module:
Cnflict Vol:  254  256    30  xxxx xxxx xxxxx                 xxxx xxxx xxxxx
Potent Cap.:  739  652  1051  xxxx xxxx xxxxx 210 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    736  648  1051  xxxx xxxx xxxxx 1372 xxxx xxxxx xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.15  xxxx xxxx  xxxx 1372 xxxx xxxxx xxxx xxxx  xxxx
------------|---------------||---------------|0.01 xxxx xxxx-||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx                xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx 0.0 xxxx xxxxx
LOS by Move:     *    *     *     *    *     * 7.6 xxxx xxxxx xxxxx xxxx xxxxx *
Movement:     LT - LTR - RT   LT - LTR - RT                  LT - LTR - RT
Shared Cap.: xxxx 1027 xxxxx  xxxx xxxx xxxxx LT - LTR - RT  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx xxxx xxxxx xxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.2 xxxxx xxxxx xxxx xxxxx 0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     * 7.6 xxxx xxxxx xxxxx xxxx xxxxx *
ApproachDel:        9.2            xxxxxx                      xxxxxx
ApproachLOS:         A                *       A                   *
**********************************************xxxxxx****************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
                                              *
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2000 HCM Unsignalized Method (Future Volume Alternative)
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Level Of Service Computation Report
Dowling Associates, Inc.
*******************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      5.9       Worst Case Level Of Service: B[ 10.3]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    20    0     8     0   23     6   120   23     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0     8     0   23     6   120   23     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    20    0     8     0   23     6   120   23     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    23    0     9     0   26     7   136   26     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    23    0     9     0   26     7   136   26     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   328  332    26  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   670  591  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   623  536  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.04 0.00  0.01  xxxx xxxx  xxxx  0.09 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  705 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx             10.3            xxxxxx           xxxxxx
ApproachLOS:        *                 B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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                       Syar Mining Traffic Assessment
                    PM Peak Hour - 6-14-07 - No Project
                          Dowling Associates, Inc.
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      5.6       Worst Case Level Of Service: B[ 10.4]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0     4    0     4     0   27     2   170   37     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     4    0     4     0   27     2   170   37     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     4    0     4     0   27     2   170   37     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     5    0     5     0   31     2   193   42     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     5    0     5     0   31     2   193   42     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   460  461    42  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   563  500  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   504  432  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  xxxx xxxx  xxxx  0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  678 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.4 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx             10.4            xxxxxx           xxxxxx
ApproachLOS:        *                 B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 Geyserville Avenue at Hamilton Lane

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: A[9.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	153	0	0	118	0	0	0	0	10	0	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	153	0	0	118	0	0	0	0	10	0	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	153	0	0	118	0	0	0	0	10	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	174	0	0	134	0	0	0	0	11	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	174	0	0	134	0	0	0	0	11	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	308	308	174
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	688	609	875
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	688	609	875
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	770	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.8	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	A	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			9.8		
ApproachLOS:	*			*			*			A		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 Geyserville Avenue at Hamilton Lane

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[10.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	168	0	0	185	0	0	0	0	10	0	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	168	0	0	185	0	0	0	0	10	0	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	168	0	0	185	0	0	0	0	10	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	191	0	0	210	0	0	0	0	11	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	191	0	0	210	0	0	0	0	11	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	401	401	191
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	541	856
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	541	856
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	712	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.2	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.2		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

```
2000 HCM Unsignalized Method (Future Volume Alternative)
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Level Of Service Computation Report
Dowling Associates, Inc.
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      4.6      Worst Case Level Of Service: A[  9.7]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0    0    75    0    6     0   22   31    17   48    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    75    0    6     0   22   31    17   48    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    75    0    6     0   22   31    17   48    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0    85    0    7     0   25   35    19   55    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    85    0    7     0   25   35    19   55    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   136  153   55  xxxx xxxx xxxxx    60 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   862  742 1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   854  733 1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.10 0.00 0.01  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  865 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.7 xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
Shared LOS:     *    *    *     *    A    *     *    *    *     A    *    *
ApproachDel:     xxxxxx             9.7            xxxxxx           xxxxxx
ApproachLOS:        *                A                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
-------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      2.2      Worst Case Level Of Service: A[  9.8]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0    36    0    4     0   58   53    16   62    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    36    0    4     0   58   53    16   62    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    36    0    4     0   58   53    16   62    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0    41    0    5     0   66   60    18   70    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    41    0    5     0   66   60    18   70    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   203  233   70  xxxx xxxx xxxxx   126 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   790  671  998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   783  662  998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.05 0.00 0.00  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  800 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.8 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *    *     *    A    *     *    *    *     A    *    *
ApproachDel:     xxxxxx             9.8            xxxxxx           xxxxxx
ApproachLOS:        *                A                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
-------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      3.0       Worst Case Level Of Service: A[  9.5]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    29    0    40     0    0     0    13   93     0     0   42    33
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     33    0    45     0    0     0    15  106     0     0   48    38
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    33    0    45     0    0     0    15  106     0     0   48    38
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  202  220   106  xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  791  682   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    785  675   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.05  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  875 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.5          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A              *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
-------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):      3.3       Worst Case Level Of Service: A[  9.6]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    28    3    58     0    0     0    24   75     0     0   44    80
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     32    3    66     0    0     0    27   85     0     0   50    91
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    32    3    66     0    0     0    27   85     0     0   50    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  235  281    85  xxxx xxxx xxxxx   141 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  757  631   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    746  619   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.01  0.07  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  876 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.6          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A              *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.150
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.4
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	63	7	0	0	13	18	25	0	119	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	63	7	0	0	13	18	25	0	119	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	63	7	0	0	13	18	25	0	119	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	xxxx	0.83	0.00	0.00	0.00
Final Sat.:	720	79	0	0	364	529	167	0	798	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	xxxx	xxxx	0.03	0.03	0.15	0.00	0.15	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:	7.8			7.0			7.3			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	7.8			7.0			7.3			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.169
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.7
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	28	0	0	18	27	17	0	84	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	106	32	0	0	20	31	19	0	95	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	32	0	0	20	31	19	0	95	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	106	32	0	0	20	31	19	0	95	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.17	0.00	0.83	0.00	0.00	0.00
Final Sat.:	625	188	0	0	357	536	152	0	753	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	xxxx	xxxx	0.06	0.06	0.13	xxxx	0.13	xxxx	xxxx	xxxx
Crit Moves:		****				****	****					
Delay/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	*	A	*	*	*
ApproachDel:	8.2			7.1			7.4			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	8.2			7.1			7.4			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28     0     0   27     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28     0     0   27     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   28     0     0   27     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   32     0     0   31     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   32     0     0   31     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx    63   63    32
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```


Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45     0     0   45     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45     0     0   45     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   45     0     0   45     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   51     0     0   51     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   51     0     0   51     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   102  102    51
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
-------------------------------------------------------------------------------
                       Syar Mining Traffic Assessment
                   AM Peak Hour - 6-14-07 - No Project
                         Dowling Associates, Inc.
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #21 Geyserville Avenue at Private Road
*******************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28    0     0   27    0     0    0    0     0    0    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28    0     0   27    0     0    0    0     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0   28    0     0   27    0     0    0    0     0    0    0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   32    0     0   31    0     0    0    0     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0   32    0     0   31    0     0    0    0     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                       Syar Mining Traffic Assessment
                   PM Peak Hour - 6-14-07 - No Project
                         Dowling Associates, Inc.
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #21 Geyserville Avenue at Private Road
*******************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45    0     0   45    0     0    0    0     0    0    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45    0     0   45    0     0    0    0     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0   45    0     0   45    0     0    0    0     0    0    0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   51    0     0   51    0     0    0    0     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0   51    0     0   51    0     0    0    0     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
********************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
********************************************************************************
Average Delay (sec/veh):      8.2       Worst Case Level Of Service: C[ 23.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0     0    19    0   186     0  454     9   250   96     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    19    0   186     0  454     9   250   96     0
Added Vol:       0    0     0    66    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    85    0   186     0  454     9   250   96     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0    97    0   211     0  516    10   284  109     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0    97    0   211     0  516    10   284  109     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1198 1203   109  xxxx xxxx xxxxx   526 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   207  186   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   164  136   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.59 0.00  0.22  xxxx xxxx  xxxx  0.27 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.9  xxxx xxxx xxxxx   1.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.9 xxxxx xxxx xxxxx   9.7 xxxx xxxxx
LOS by Move:     *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   164 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   3.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  54.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     F    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx            23.9            xxxxxx            xxxxxx
ApproachLOS:       *                C                 *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```


Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
********************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
********************************************************************************
Average Delay (sec/veh):      5.8       Worst Case Level Of Service: B[ 13.8]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0     0    15    1   280     0  414    15    79  130     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    15    1   280     0  414    15    79  130     0
Added Vol:       0    0     0    84    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    99    1   280     0  414    15    79  130     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   113    1   318     0  470    17    90  148     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   113    1   318     0  470    17    90  148     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   806  815   148  xxxx xxxx xxxxx   488 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   354  314   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   332  288   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.34 0.00  0.35  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.6  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  11.1 xxxxx xxxx xxxxx   8.6 xxxx xxxxx
LOS by Move:     *    *     *     *    *     B     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   331 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  21.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     C    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx            13.8            xxxxxx            xxxxxx
ApproachLOS:       *                B                 *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
Average Delay (sec/veh):     3.8       Worst Case Level Of Service: B[ 12.6]
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       5    2   137     0    0     0   254  224     0     0  342    19
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    2   137     0    0     0   254  224     0     0  342    19
Added Vol:      0    0     0     0    0     0     0   66     0     0    0    84
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5    2   137     0    0     0   254  290     0     0  342   103
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     6    2   156     0    0     0   289  330     0     0  389   117
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    6    2   156     0    0     0   289  330     0     0  389   117
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1354 1413   330  xxxx xxxx xxxxx   506 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  167  139   717  xxxx xxxx xxxxx  1069 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    132  102   717  xxxx xxxx xxxxx  1069 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.02  0.22  xxxx xxxx  xxxx  0.27 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   0.8  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  11.4 xxxxx xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:  122 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 36.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     E    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      12.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
Note: Queue reported is the number of cars per lane.
```


Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
Average Delay (sec/veh):     4.3       Worst Case Level Of Service: B[ 12.6]
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       9    0   196     0    0     0   250  169     0     0  357    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9    0   196     0    0     0   250  169     0     0  357    18
Added Vol:      0    0     0     0    0     0     0   84     0     0    0    66
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    0   196     0    0     0   250  253     0     0  357    84
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    10    0   223     0    0     0   284  288     0     0  406    95
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   10    0   223     0    0     0   284  288     0     0  406    95
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1309 1357   288  xxxx xxxx xxxxx   501 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  177  150   756  xxxx xxxx xxxxx  1074 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    141  111   756  xxxx xxxx xxxxx  1074 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.00  0.29  xxxx xxxx  xxxx  0.26 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   1.2  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  11.7 xxxxx xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *   [illegible]     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:  141 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 32.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     D    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      12.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
Note: Queue reported is the number of cars per lane.
```

2000 HCM 4-Way Stop Method (Future Volume Alternative)
AM Peak Hour - 6-14-07 - No Project
Syar Mining Traffic Assessment
Level Of Service Computation Report
Dowling Associates, Inc.

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.217
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.3
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	55	83	78	91	0	0	0	0	90	0	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	55	83	78	91	0	0	0	0	90	0	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	55	83	78	91	0	0	0	0	90	0	63
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	339	515	362	420	0	0	0	0	458	0	319
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.16	0.16	0.22	0.22	xxxx	xxxx	xxxx	xxxx	0.20	xxxx	0.20
Crit Moves:		****		****								****
Delay/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	7.8			8.7			xxxxxx			8.4		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	7.8			8.7			xxxxxx			8.4		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.2	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.317
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	88	86	63	76	0	0	0	0	127	0	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	88	86	63	76	0	0	0	0	127	0	122
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	88	86	63	76	0	0	0	0	127	0	122
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	400	394	327	399	0	0	0	0	401	0	384
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.19	0.19	xxxx	xxxx	xxxx	xxxx	0.32	xxxx	0.32
Crit Moves:		****			****							
Delay/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	8.5			8.8			xxxxxx			9.3		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	8.5			8.8			xxxxxx			9.3		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.4	0.4	0.4

Note: Queue reported is the number of cars per lane.

AM Peak Hour - 6-14-07 - No Project

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Dowling Associates, Inc.

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100   Critical Vol./Cap.(X): 0.151
Loss Time (sec): 0 (Y+R=4.0 sec)   Average Delay (sec/veh): 7.5
Optimal Cycle: 0   Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	73	2	2	6	3	38	17	28	93	8	24	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	2	2	6	3	38	17	28	93	8	24	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	73	2	2	6	3	38	17	28	93	8	24	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	733	23	23	109	65	717	113	188	616	184	552	79
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.05	0.05	0.05	0.15	0.15	0.15	0.04	0.04	0.04
Crit Moves:		****				****		****			****	
Delay/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		7.9			7.1			7.5			7.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		7.9			7.1			7.5			7.5	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100   Critical Vol./Cap.(X): 0.258
Loss Time (sec): 0 (Y+R=4.0 sec)   Average Delay (sec/veh): 8.4
Optimal Cycle: 0   Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0		0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33	27	19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	27	19	89	3	40	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	188	6	5	0	2	38	31	22	101	3	45	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	6	5	0	2	38	31	22	101	3	45	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	6	5	0	2	38	31	22	101	3	45	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20	0.14	0.66	0.07	0.89	0.04
Final Sat.:	726	22	18	0	49	803	166	117	548	50	662	33
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.26	xxxx	0.05	0.05	0.18	0.18	0.18	0.07	0.07	0.07
Crit Moves:		****				****	****				****	
Delay/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
LOS by Move:	A	A	A	*	A	A	A	A	A	A	A	A
ApproachDel:		9.1			7.2			8.0			7.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.1			7.2			8.0			7.9	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #34 Lytton Station Road at Alexander Valley Road

Average Delay (sec/veh): 2.9 Worst Case Level Of Service: B[11.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			1 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	104	0	0	4	116	0	0	132	77
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	104	0	0	4	116	0	0	132	77
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	104	0	0	4	116	0	0	132	77
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	118	0	0	5	132	0	0	150	88
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	118	0	0	5	132	0	0	150	88
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	335	xxxx	xxxxx	238	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	665	xxxx	xxxxx	1341	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	663	xxxx	xxxxx	1341	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.18	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.6	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #34 Lytton Station Road at Alexander Valley Road

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: B[13.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	82	0	5	5	92	0	0	250	158
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	82	0	5	5	92	0	0	250	158
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	82	0	5	5	92	0	0	250	158
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	93	0	6	6	105	0	0	284	180
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	93	0	6	6	105	0	0	284	180
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	490	490	374	464	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	541	482	677	1108	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	539	479	677	1108	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.17	0.00	0.01	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	545	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	13.1	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			13.1			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Scenario Report

Scenario:	AM Peak Hour 3
Command:	AM Peak Hour 3
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 3
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 3

Scenario Report

Scenario:	PM Peak Hour 3
Command:	PM Peak Hour 3
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 3
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 3

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Trip Generation Report

Forecast for AM Peak Hour 3

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
3	Route 3	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
Zone 3 Subtotal						84	66	150	100.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 3

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
3	Route 3	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 3 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Turning Movement Report
AM Peak Hour 3

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	94	66	10	0	23	9	73	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	14	84	100	0	0	0	8	116	0	0	78	72	472
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	0	0	0	0	0	0	66	0	0	66
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	0	0	84	0	0	0	0	0	0	0	66	0	150

Turning Movement Report
PM Peak Hour 3

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	0	0	0	0	0	0	84	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	0	0	66	0	0	0	0	0	0	0	84	0	150

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	118	153	0	0	0	0	0	271
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	130	0	0	0	2	23	0	0	117	1	279
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	20	0	8	0	23	6	120	23	0	200
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	185	168	0	0	0	0	0	353
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	0	142	0	0	0	7	26	0	0	182	3	368
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	4	0	27	2	170	37	0	244
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	66	0	0	0	0	0	0	0	150
Total	0	84	0	0	66	0	0	0	0	0	0	0	150
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	84	0	0	0	0	0	0	0	150
Total	0	66	0	0	84	0	0	0	0	0	0	0	150
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

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Link Volume Report
AM Peak Hour 3

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	148	148	170	0	170	32	35	67	98	117	215	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	198	0	198	0	164	164	124	92	216	150	216	366	944
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	66	66	0	0	0	0	0	0	66	0	66	132
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	84	0	84	0	0	0	0	66	66	66	84	150	300

Link Volume Report
PM Peak Hour 3

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	84	84	0	0	0	0	0	0	84	0	84	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	66	0	66	0	0	0	0	84	84	84	66	150	300

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	118	153	271	153	118	271	0	0	0	542
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	136	0	136	0	3	3	25	123	148	118	153	271	558
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	126	126	28	0	28	29	31	60	143	43	186	400
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	185	168	353	168	185	353	0	0	0	706
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	150	0	150	0	10	10	33	190	223	185	168	353	736
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	172	172	8	0	8	29	41	70	207	31	238	488
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	66	84	150	0	0	0	0	0	0	300
Total	84	66	150	66	84	150	0	0	0	0	0	0	300
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	84	66	150	0	0	0	0	0	0	300
Total	66	84	150	84	66	150	0	0	0	0	0	0	300
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Impact Analysis Report
Level Of Service
LOS Veh
Del/

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	10.5	0.000	B	11.9	0.000	+ 1.343 D/V
# 5 Highway 101 nb at Lytton Sprin	A	9.7	0.000	B	12.0	0.000	+ 2.299 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.7	0.000	B	10.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.7	0.000	A	9.7	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.5	0.000	A	9.5	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.4	0.150	A	7.4	0.150	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.8	0.000	C	23.9	0.000	+12.116 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.6	0.000	B	12.6	0.000	+ 1.012 D/V
# 31 Geyserville Avenue at Highway	A	8.3	0.217	A	8.3	0.217	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.5	0.151	A	7.5	0.151	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	11.6	0.000	B	11.6	0.000	+ 0.000 D/V

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	12.7	0.000	C	16.6	0.000	+ 3.865 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.3	0.000	B	12.7	0.000	+ 2.360 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.8	0.000	B	10.8	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.2	0.000	A	9.2	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.6	0.000	A	9.6	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.169	A	7.7	0.169	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.4	0.000	B	13.8	0.000	+ 2.422 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.4	0.000	B	12.6	0.000	+ 1.231 D/V
# 31 Geyserville Avenue at Highway	A	8.9	0.317	A	8.9	0.317	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	8.4	0.258	A	8.4	0.258	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0
ApproachDel:	xxxxxx			10.5			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	68	0	5	0	43	38	148	26	0
ApproachDel:	xxxxxx			12.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 41 38	148 26 0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:    14    0  100     0    0    0     8  116    0     0   78   72
ApproachDel:      9.7            xxxxxx          xxxxxx          xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:    40    0   95     0    0    0    17   90    0     0  140   98
ApproachDel:     10.3            xxxxxx          xxxxxx          xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	17 90 0	0 140 98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                    Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
Initial Vol:  135    0    0     0    0   15    21    0  185     0    0    0
ApproachDel:    xxxxxx           xxxxxx            10.7           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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                    Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
Initial Vol:  214    0    0     0    0   24    18    0  170     0    0    0
ApproachDel:    xxxxxx           xxxxxx            10.8           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.0			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=153]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=271]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.1			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.5]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=168]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=353]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	6		0		130	0		0		0	2		23		0	0		117		1
ApproachDel:	9.1					xxxxxx					xxxxxx					xxxxxx				

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	8		0		142	0		0		0	7		26		0	0		182		3
ApproachDel:	9.2					xxxxxx					xxxxxx					xxxxxx				

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
Peak Hour Delay Signal Warrant Report
**************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
**************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
Initial Vol:    0    0    0    20    0    8     0   23    6   120   23    0
ApproachDel:    xxxxxx           10.3            xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.
--------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



```
Peak Hour Delay Signal Warrant Report
**************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
**************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
Initial Vol:    0    0    0     4    0    4     0   21    2   170   37    0
ApproachDel:    xxxxxx           10.4            xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 27 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	9.8

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0		0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.2

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0
ApproachDel:	xxxxxx	9.7	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0
ApproachDel:	xxxxxx	9.8	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33
ApproachDel:	9.5			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	28	3	58	0	0	0	24	76	0	0	44	80
ApproachDel:	9.6			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 76 0	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	55 6 0	0 11 16	22 0 105	0 0 0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	93 28 0	0 18 27	17 0 84	0 0 0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

```
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
Initial Vol:    0   28     0     0   27     0     0    0     0     0    0     0
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

```
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
Initial Vol:    0   45     0     0   45     0     0    0     0     0    0     0
ApproachDel:    xxxxxx           xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	28	0	0	27	0	0	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	45	0	0	45	0	0	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0
ApproachDel:	xxxxxx	11.8	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.7]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #2: [approach volume=205]

SUCCEED - Approach volume >= 150 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=1014]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0
ApproachDel:	xxxxxx	11.4	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.9]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #2: [approach volume=296]

SUCCEED - Approach volume >= 150 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=934]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19
ApproachDel:	11.6	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.5]

Signal Warrant Rule #2: [approach volume=144]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=983]

FAIL - Approach volume less than 150 for two or more lane approach.

SUCCEED - Total volume greater than or equal to 650 for intersection

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

with less than four approaches.

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0		0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	1 0 1160 0 0	0 357 18
ApproachDel:	11.4	xxxxxx	250	xxxxxx
			xxxxxx	

Approach[northbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.6]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #2: [approach volume=205]

SUCCEED - Approach volume >= 150 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=999]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 169 0	0 357 18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	64 2 2	5 3 33	15 25 82	7 21 3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	165 5 4	0 2 33	27 110 89	3 40 2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	11.6	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	0 92 0	0 250 158
ApproachDel:	xxxxxx	13.1	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
***************************************************************************
Average Delay (sec/veh):      8.5       Worst Case Level Of Service: B[ 11.9]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0   94    0    10    0   23     9   73   25     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0   94    0    10    0   23     9   73   25     0
Added Vol:      0    0     0    0   66     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0   94   66    10    0   23     9   73   25     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0  107   75    11    0   26    10   83   28     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0  107   75    11    0   26    10   83   28     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx  6.4  6.5   6.2 xxxxx xxxx xxxxx  4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx  3.5  4.0   3.3 xxxxx xxxx xxxxx  2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  226  231    28  xxxx xxxx xxxxx   36 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  767  673  1052  xxxx xxxx xxxxx 1587 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  735  636  1052  xxxx xxxx xxxxx 1587 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 0.15 0.12  0.01  xxxx xxxx  xxxx 0.05 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx  0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx  7.4 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A    *    *     *    A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  691 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  1.1 xxxx xxxxx xxxxx xxxx xxxxx  0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 12.1 xxxx xxxxx xxxxx xxxx xxxxx  7.4 xxxx xxxxx
Shared LOS:     *    *     *    B    *     *    *    *     *    A    *     *
ApproachDel:      xxxxxx           11.9           xxxxxx           xxxxxx
ApproachLOS:        *               B               *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



```
---------------------------------------------------------------------------
---------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
***************************************************************************
Average Delay (sec/veh):      9.1       Worst Case Level Of Service: C[ 16.6]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   68    0     5    0   43    38  148   26     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0   68    0     5    0   43    38  148   26     0
Added Vol:      0    0     0    0   84     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0   68   84     5    0   43    38  148   26     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0   77   95     6    0   49    43  168   30     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0   77   95     6    0   49    43  168   30     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx  6.4  6.5   6.2 xxxxx xxxx xxxxx  4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx  3.5  4.0   3.3 xxxxx xxxx xxxxx  2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  436  458    30  xxxx xxxx xxxxx   92 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  581  502  1051  xxxx xxxx xxxxx 1515 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  527  441  1051  xxxx xxxx xxxxx 1515 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 0.15 0.22  0.01  xxxx xxxx  xxxx 0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx  0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.4 xxxxx xxxx xxxxx  7.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A    *    *     *    A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  475 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  1.6 xxxx xxxxx xxxxx xxxx xxxxx  0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 16.8 xxxx xxxxx xxxxx xxxx xxxxx  7.7 xxxx xxxxx
Shared LOS:     *    *     *    C    *     *    *    *     *    A    *     *
ApproachDel:      xxxxxx           16.6           xxxxxx           xxxxxx
ApproachLOS:        *               C               *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

```
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***********************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
***********************************************************************
Average Delay (sec/veh):      5.2     Worst Case Level Of Service: B[ 12.0]
***********************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0   84     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   84   100     0    0     0     8  116     0     0   78    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    16   95   114     0    0     0     9  132     0     0   89    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   16   95   114     0    0     0     9  132     0     0   89    82
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  280  320   132  xxxx xxxx xxxxx   170 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  715  600   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    711  596   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.16  0.12  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  736 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.0 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      12.0            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
***********************************************************************
Note: Queue reported is the number of cars per lane.
***********************************************************************
```



```
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***********************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
***********************************************************************
Average Delay (sec/veh):      4.9     Worst Case Level Of Service: B[ 12.7]
***********************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0   66     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40   66    95     0    0     0    17   93     0     0  140    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    45   75   108     0    0     0    19  106     0     0  159   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   45   75   108     0    0     0    19  106     0     0  159   111
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  359  415   106  xxxx xxxx xxxxx   270 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  644  531   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    636  523   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.14  0.11  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  697 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.7 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      12.7            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
***********************************************************************
Note: Queue reported is the number of cars per lane.
***********************************************************************
```

```
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      9.0       Worst Case Level Of Service: B[ 10.7]
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135    0    0     0    0   15    21    0  185     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  135    0    0     0    0   15    21    0  185     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  135    0    0     0    0   15    21    0  185     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:   153    0    0     0    0   17    24    0  210     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:  153    0    0     0    0   17    24    0  210     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   17 xxxx xxxxx  xxxx xxxx xxxxx   307  307    0  xxxx xxxx xxxxx
Potent Cap.: 1613 xxxx xxxxx  xxxx xxxx xxxxx   689  610  900  xxxx xxxx xxxxx
Move Cap.:   1613 xxxx xxxxx  xxxx xxxx xxxxx   639  552  900  xxxx xxxx xxxxx
Volume/Cap:  0.10 xxxx  xxxx  xxxx xxxx  xxxx 0.04 0.00 0.23  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *    *     *    *    *     *    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  864 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.7 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    B    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx            10.7           xxxxxx
ApproachLOS:        *                *                B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      8.6       Worst Case Level Of Service: B[ 10.8]
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     214    0    0     0    0   24    18    0  170     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  214    0    0     0    0   24    18    0  170     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  214    0    0     0    0   24    18    0  170     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:   243    0    0     0    0   27    20    0  193     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:  243    0    0     0    0   27    20    0  193     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   27 xxxx xxxxx  xxxx xxxx xxxxx   486  486    0  xxxx xxxx xxxxx
Potent Cap.: 1600 xxxx xxxxx  xxxx xxxx xxxxx   544  484  900  xxxx xxxx xxxxx
Move Cap.:   1600 xxxx xxxxx  xxxx xxxx xxxxx   480  411  900  xxxx xxxx xxxxx
Volume/Cap:  0.15 xxxx  xxxx  xxxx xxxx  xxxx 0.04 0.00 0.21  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.5 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *    *     *    *    *     *    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  531 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    B    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx            10.8           xxxxxx
ApproachLOS:        *                *                B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Average Delay (sec/veh):      5.6      Worst Case Level Of Service: A[ 10.0]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   118   153    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   118   153    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     0    0   118   153    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     0    0   134   174    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     0    0   134   174    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.19 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.7 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             10.0           xxxxxx
ApproachLOS:        *                *                 A                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Average Delay (sec/veh):      4.8      Worst Case Level Of Service: B[ 10.1]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   185   168    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   185   168    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     0    0   185   168    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     0    0   210   191    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     0    0   210   191    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.21 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.8 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             10.1           xxxxxx
ApproachLOS:        *                *                 B                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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-------------------------------------------------------------------------------
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                  Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      4.5       Worst Case Level Of Service: A[  9.1]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        6    0  130     0    0    0     2   23    0     0  117    1
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     6    0  130     0    0    0     2   23    0     0  117    1
Added Vol:       0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:     6    0  130     0    0    0     2   23    0     0  117    1
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:      7    0  148     0    0    0     2   26    0     0  133    1
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:     7    0  148     0    0    0     2   26    0     0  133    1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5  6.2 xxxxx xxxx xxxxx  4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0  3.3 xxxxx xxxx xxxxx  2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  164  165   26  xxxx xxxx xxxxx   134 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  831  731 1055  xxxx xxxx xxxxx  1463 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    830  730 1055  xxxx xxxx xxxxx  1463 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:   0.01 0.00 0.14  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     *    *    *     A    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1043 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.1 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A    *     *    *    *     A    *    *     *    *    *
ApproachDel:        9.1           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                  Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      3.9       Worst Case Level Of Service: A[  9.2]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        8    0  142     0    0    0     7   26    0     0  182    3
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     8    0  142     0    0    0     7   26    0     0  182    3
Added Vol:       0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:     8    0  142     0    0    0     7   26    0     0  182    3
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:      9    0  161     0    0    0     8   30    0     0  207    3
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:     9    0  161     0    0    0     8   30    0     0  207    3
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5  6.2 xxxxx xxxx xxxxx  4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0  3.3 xxxxx xxxx xxxxx  2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  254  256   30  xxxx xxxx xxxxx   210 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  739  652 1051  xxxx xxxx xxxxx  1372 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    736  648 1051  xxxx xxxx xxxxx  1372 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:   0.01 0.00 0.15  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     *    *    *     A    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1027 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.2 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A    *     *    *    *     A    *    *     *    *    *
ApproachDel:        9.2           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
*********************************************************************************
Average Delay (sec/veh):      5.9       Worst Case Level Of Service: B[ 10.3]
*********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    20    0     8     0   23     6   120   23     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0     8     0   23     6   120   23     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    20    0     8     0   23     6   120   23     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    23    0     9     0   26     7   136   26     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    23    0     9     0   26     7   136   26     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   328  332    26  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   670  591  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   623  536  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.04 0.00  0.01  xxxx xxxx  xxxx  0.09 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  705 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            10.3            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
*********************************************************************************
Average Delay (sec/veh):      5.6       Worst Case Level Of Service: B[ 10.4]
*********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0     4    0     4     0   27     2   170   37     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     4    0     4     0   27     2   170   37     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     4    0     4     0   27     2   170   37     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     5    0     5     0   31     2   193   42     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     5    0     5     0   31     2   193   42     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   460  461    42  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   563  500  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   504  432  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  xxxx xxxx  xxxx  0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  678 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.4 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            10.4            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

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-----------------------------------------------------------------------------
                Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*****************************************************************************
Average Delay (sec/veh):      0.7       Worst Case Level Of Service: A[  9.8]
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  153     0     0  118     0     0    0     0    10    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  153     0     0  118     0     0    0     0    10    0    10
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  153     0     0  118     0     0    0     0    10    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  174     0     0  134     0     0    0     0    11    0    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  174     0     0  134     0     0    0     0    11    0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   308  308   174
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   688  609   875
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   688  609   875
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  770 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  9.8 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    A     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx             9.8
ApproachLOS:        *                *                *                A
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



```
-----------------------------------------------------------------------------
                Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*****************************************************************************
Average Delay (sec/veh):      0.5       Worst Case Level Of Service: B[ 10.2]
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  168     0     0  185     0     0    0     0    10    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  168     0     0  185     0     0    0     0    10    0    10
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  168     0     0  185     0     0    0     0    10    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  191     0     0  210     0     0    0     0    11    0    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  191     0     0  210     0     0    0     0    11    0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   401  401   191
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  712 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.2 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            10.2
ApproachLOS:        *                *                *                B
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #16 Highway 101 sb ramp at Canyon Road

Average Delay (sec/veh): 4.6 Worst Case Level Of Service: A[9.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	75	0	6	0	22	31	17	48	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	75	0	6	0	22	31	17	48	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	75	0	6	0	22	31	17	48	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	85	0	7	0	25	35	19	55	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	85	0	7	0	25	35	19	55	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	136	153	55	xxxx	xxxx	xxxxx	60	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	862	742	1018	xxxx	xxxx	xxxxx	1556	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	854	733	1018	xxxx	xxxx	xxxxx	1556	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.10	0.00	0.01	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	865	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	9.7	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			9.7			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #16 Highway 101 sb ramp at Canyon Road

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: A[9.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	36	0	4	0	58	53	16	62	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	36	0	4	0	58	53	16	62	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	36	0	4	0	58	53	16	62	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	41	0	5	0	66	60	18	70	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	41	0	5	0	66	60	18	70	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	203	233	70	xxxx	xxxx	xxxxx	126	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	790	671	998	xxxx	xxxx	xxxxx	1473	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	783	662	998	xxxx	xxxx	xxxxx	1473	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.05	0.00	0.00	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	800	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	9.8	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      3.0      Worst Case Level Of Service: A[  9.5]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29    0    40     0    0     0    13   93     0     0   42    33
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    33    0    45     0    0     0    15  106     0     0   48    38
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   33    0    45     0    0     0    15  106     0     0   48    38
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  202  220   106  xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  791  682   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    785  675   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.05  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  875 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.5           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      3.3      Worst Case Level Of Service: A[  9.6]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   28    3    58     0    0     0    24   75     0     0   44    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    32    3    66     0    0     0    27   85     0     0   50    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   32    3    66     0    0     0    27   85     0     0   50    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  235  281    85  xxxx xxxx xxxxx   141 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  757  631   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    746  619   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.01  0.07  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  876 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.150
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.4
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	63	7	0	0	13	18	25	0	119	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	63	7	0	0	13	18	25	0	119	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	63	7	0	0	13	18	25	0	119	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	xxxx	0.83	0.00	0.00	0.00
Final Sat.:	720	79	0	0	364	529	167	0	798	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	xxxx	xxxx	0.03	0.03	0.15	0.00	0.15	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:	7.8			7.0			7.3			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	7.8			7.0			7.3			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.169
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.7
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	28	0	0	18	27	17	0	84	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	106	32	0	0	20	31	19	0	95	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	32	0	0	20	31	19	0	95	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	106	32	0	0	20	31	19	0	95	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.17	0.00	0.83	0.00	0.00	0.00
Final Sat.:	625	188	0	0	357	536	152	0	753	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	xxxx	xxxx	0.06	0.06	0.13	xxxx	0.13	xxxx	xxxx	xxxx
Crit Moves:		****				****	****					
Delay/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	*	A	*	*	*
ApproachDel:	8.2			7.1			7.4			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	8.2			7.1			7.4			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	32	0	0	31	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	32	0	0	31	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	63	63	32
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	949	832	1048
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	949	832	1048
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	51	0	0	51	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	51	0	0	51	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	102	102	51
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	901	792	1023
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	901	792	1023
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	32	0	0	31	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	32	0	0	31	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		xxxxxx			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		*			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	51	0	0	51	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	51	0	0	51	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		xxxxxx			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		*			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 8.2 Worst Case Level Of Service: C[23.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	19	0	186	0	454	9	250	96	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	19	0	186	0	454	9	250	96	0
Added Vol:	0	0	0	66	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	85	0	186	0	454	9	250	96	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	97	0	211	0	516	10	284	109	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	97	0	211	0	516	10	284	109	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1198	1203	109	xxxx	xxxx	xxxxx	526	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	207	186	950	xxxx	xxxx	xxxxx	1051	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	164	136	950	xxxx	xxxx	xxxxx	1051	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.59	0.00	0.22	xxxx	xxxx	xxxx	0.27	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	1.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.9	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	164	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	3.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	54.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			23.9			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: B[13.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	15	1	280	0	414	15	79	130	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	15	1	280	0	414	15	79	130	0
Added Vol:	0	0	0	84	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	99	1	280	0	414	15	79	130	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	113	1	318	0	470	17	90	148	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	113	1	318	0	470	17	90	148	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	806	815	148	xxxx	xxxx	xxxxx	488	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	354	314	904	xxxx	xxxx	xxxxx	1086	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	332	288	904	xxxx	xxxx	xxxxx	1086	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.34	0.00	0.35	xxxx	xxxx	xxxx	0.08	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.6	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.1	xxxxx	xxxx	xxxxx	8.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	331	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	1.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	21.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	C	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.8			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
******************************************************************************
Average Delay (sec/veh):      3.8      Worst Case Level Of Service: B[ 12.6]
******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       5    2   137     0    0     0   254  224     0     0  342    19
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    2   137     0    0     0   254  224     0     0  342    19
Added Vol:      0    0     0     0    0     0     0   66     0     0    0    84
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5    2   137     0    0     0   254  290     0     0  342   103
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     6    2   156     0    0     0   289  330     0     0  389   117
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    6    2   156     0    0     0   289  330     0     0  389   117
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1354 1413   330  xxxx xxxx xxxxx   506 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  167  139   717  xxxx xxxx xxxxx  1069 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    132  102   717  xxxx xxxx xxxxx  1069 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.02  0.22  xxxx xxxx  xxxx  0.27 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   0.8  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  11.4 xxxxx xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:  122 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 36.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     E    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        12.6          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          B              *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
******************************************************************************
Average Delay (sec/veh):      4.3      Worst Case Level Of Service: B[ 12.6]
******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       9    0   196     0    0     0   250  169     0     0  357    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9    0   196     0    0     0   250  169     0     0  357    18
Added Vol:      0    0     0     0    0     0     0   84     0     0    0    66
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    9    0   196     0    0     0   250  253     0     0  357    84
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    10    0   223     0    0     0   284  288     0     0  406    95
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   10    0   223     0    0     0   284  288     0     0  406    95
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1309 1357   288  xxxx xxxx xxxxx   501 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  177  150   756  xxxx xxxx xxxxx  1074 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    141  111   756  xxxx xxxx xxxxx  1074 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.00  0.29  xxxx xxxx  xxxx  0.26 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   1.2  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  11.7 xxxxx xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:  141 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 32.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     D    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        12.6          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          B              *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.217
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.3
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	55	83	78	91	0	0	0	0	90	0	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	55	83	78	91	0	0	0	0	90	0	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	55	83	78	91	0	0	0	0	90	0	63
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	339	515	362	420	0	0	0	0	458	0	319
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.16	0.16	0.22	0.22	xxxx	xxxx	xxxx	xxxx	0.20	xxxx	0.20
Crit Moves:		****		****								****
Delay/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	7.8			8.7			xxxxxx			8.4		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	7.8			8.7			xxxxxx			8.4		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.2	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.317
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	88	86	63	76	0	0	0	0	127	0	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	88	86	63	76	0	0	0	0	127	0	122
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	88	86	63	76	0	0	0	0	127	0	122
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	400	394	327	399	0	0	0	0	401	0	384
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.19	0.19	xxxx	xxxx	xxxx	xxxx	0.32	xxxx	0.32
Crit Moves:		****			****							
Delay/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	8.5			8.8			xxxxxx			9.3		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	8.5			8.8			xxxxxx			9.3		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.4	0.4	0.4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.151
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.5
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	73	2	2	6	3	38	17	28	93	8	24	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	2	2	6	3	38	17	28	93	8	24	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	73	2	2	6	3	38	17	28	93	8	24	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	733	23	23	109	65	717	113	188	616	184	552	79
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.05	0.05	0.05	0.15	0.15	0.15	0.04	0.04	0.04
Crit Moves:		****				****		****			****	
Delay/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		7.9			7.1			7.5			7.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		7.9			7.1			7.5			7.5	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.258
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.4
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound						West Bound		
Movement:	L	T	R	L	T	R	East Bound			L	T	R
Control:	Stop Sign			Stop Sign						Stop Sign		
Rights:	Include			Include						Include		
Min. Green:	0	0	0	0	0	0	Stop Sign	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	0	1 0			0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<							1 0 Include 1! 0					
Base Vol:	165	5	4	0	2	33		19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	2700 1.00		1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0			0	0	0	0
PasserByVol:	0	0	0	0	0	0	27	0 0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	0	19	89	3	40	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	0		1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	2700 1.00		0.88	0.88	0.88	0.88
PHF Volume:	188	6	5	0	2	38	0.88 0.88	22	101	3	45	2
Reduct Vol:	0	0	0	0	0	0	31	0	0	0	0	0
Reduced Vol:	188	6	5	0	2	38		22	101	3	45	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	0		1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	3100 1.00		1.00	1.00	1.00	1.00
FinalVolume:	188	6	5	0	2	38	1.00 1.00	22	101	3	45	2
Saturation Flow Module:							31					
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	1.00 1.00		0.66	0.07	0.89	0.04
Final Sat.:	726	22	18	0	49	803	0.20 0.14	117	548	50	662	33
Capacity Analysis Module:							166					
Vol/Sat:	0.26	0.26	0.26	xxxx	0.05	0.05			0.18	0.07	0.07	0.07
Crit Moves:		****				****	0.18 0.18				****	
Delay/Veh:	9.1	9.1	9.1	0.0	7.2	7.2		8.0	8.0	7.9	7.9	7.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	8.0 1.00 1.00		1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	****	8.0	8.0	7.9	7.9	7.9
LOS by Move:	A	A	A	*	A	A	8.0	A	A	A	A	A
ApproachDel:		9.1			7.2						7.9	
Delay Adj:		1.00			1.00		A				1.00	
ApprAdjDel:		9.1			7.2						7.9	
LOS by Appr:		A			A						A	
AllWayAvgQ:	0.3	0.3	0.3	0.0	0.0	0.0	8.0 1.00	0.2	0.2	0.1	0.1	0.1

0.2

Note: Queue reported is the number of cars per lane. 8.0

A

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AM Peak Hour 3          Mon Dec 29, 2008 05:39:24             Page 25-1
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                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*******************************************************************************
Average Delay (sec/veh):      2.9      Worst Case Level Of Service: B[ 11.6]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   1  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0  104    0     0     4  116     0     0  132    77
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0  104    0     0     4  116     0     0  132    77
Added Vol:      0    0     0    0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0  104    0     0     4  116     0     0  132    77
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0  118    0     0     5  132     0     0  150    88
Reduct Vol:     0    0     0    0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0  118    0     0     5  132     0     0  150    88
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   335 xxxx xxxxx   238 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   665 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   663 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.18 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.6 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  11.6 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     *     A    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     A    *     *     *    *     *
ApproachDel:     xxxxxx           11.6            xxxxxx           xxxxxx
ApproachLOS:        *               B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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PM Peak Hour 3          Mon Dec 29, 2008 05:39:28             Page 25-1
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                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*******************************************************************************
Average Delay (sec/veh):      2.0      Worst Case Level Of Service: B[ 13.1]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0   82    0     5     5   92     0     0  250   158
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   82    0     5     5   92     0     0  250   158
Added Vol:      0    0     0    0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   82    0     5     5   92     0     0  250   158
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   93    0     6     6  105     0     0  284   180
Reduct Vol:     0    0     0    0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   93    0     6     6  105     0     0  284   180
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   490  490   374   464 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   541  482   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   539  479   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.17 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  545 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.7 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 13.1 xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:     xxxxxx           13.1            xxxxxx           xxxxxx
ApproachLOS:        *               B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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Scenario:	AM Peak Hour 4
Command:	AM Peak Hour 4
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 4
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 4

Scenario Report

Scenario Report

Scenario:	PM Peak Hour 4
Command:	PM Peak Hour 4
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 4
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 4

Trip Generation Report

Forecast for AM Peak Hour 4

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
4	Route 4	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
Zone 4 Subtotal						84	66	150	100.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 4

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
4	Route 4	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 4 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Turning Movement Report

AM Peak Hour 4

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	94	66	10	0	23	9	73	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	14	84	100	0	0	0	8	116	0	0	78	72	472
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84

Turning Movement Report

PM Peak Hour 4

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	118	153	0	84	0	0	0	421
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	6	0	214	0	0	0	2	23	0	0	183	1	429
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	20	0	8	0	23	6	186	23	0	266
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	185	168	0	66	0	0	0	503
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	8	0	208	0	0	0	7	26	0	0	266	3	518
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	4	0	4	0	27	2	254	37	0	328
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Link Volume Report
AM Peak Hour 4

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	148	148	170	0	170	32	35	67	98	117	215	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	198	0	198	0	164	164	124	92	216	150	216	366	944
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168

Link Volume Report
PM Peak Hour 4

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	118	153	271	237	184	421	0	0	0	842
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	220	0	220	0	3	3	25	189	214	184	237	421	858
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	192	192	28	0	28	29	31	60	209	43	252	532
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	185	168	353	234	269	503	0	0	0	1006
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	216	0	216	0	10	10	33	274	307	269	234	503	1036
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	256	256	8	0	8	29	41	70	291	31	322	656
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	10.5	0.000	B	11.9	0.000	+ 1.343 D/V
# 5 Highway 101 nb at Lytton Sprin	A	9.7	0.000	B	12.0	0.000	+ 2.299 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.7	0.000	B	10.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	A	10.0	0.000	B	11.3	0.000	+ 1.316 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.1	0.000	A	9.5	0.000	+ 0.479 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.3	0.000	B	11.6	0.000	+ 1.286 D/V
# 15 Geyserville Avenue at Hamilton	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.7	0.000	A	9.7	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.5	0.000	A	9.5	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.4	0.150	A	7.4	0.150	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.8	0.000	C	23.9	0.000	+12.116 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.6	0.000	B	12.6	0.000	+ 1.012 D/V
# 31 Geyserville Avenue at Highway	A	8.3	0.217	A	8.3	0.217	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.5	0.151	A	7.5	0.151	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	11.6	0.000	B	11.6	0.000	+ 0.000 D/V

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	12.7	0.000	C	16.6	0.000	+ 3.865 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.3	0.000	B	12.7	0.000	+ 2.360 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.8	0.000	B	10.8	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.1	0.000	B	11.8	0.000	+ 1.715 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.2	0.000	A	9.6	0.000	+ 0.401 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.4	0.000	B	11.8	0.000	+ 1.422 D/V
# 15 Geyserville Avenue at Hamilton	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.6	0.000	A	9.6	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.169	A	7.7	0.169	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.4	0.000	B	13.8	0.000	+ 2.422 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.4	0.000	B	12.6	0.000	+ 1.231 D/V
# 31 Geyserville Avenue at Highway	A	8.9	0.317	A	8.9	0.317	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	8.4	0.258	A	8.4	0.258	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

Intersection	Base Met	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Signal Warrant Summary Report

[Del / Vol]

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0
ApproachDel:	xxxxxx	10.5	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 41 38	148 26 0
ApproachDel:	xxxxxx	12.7	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0
Initial Vol:	0		0		0	94		0		10	0		23		9	73		25		0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0
Initial Vol:	0		0		0	68		0		5	0		43		38	148		26		0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	14	0	100	0	0	0	8	116	0	0	78	72
ApproachDel:	9.7			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	40	0	95	0	0	0	17	90	0	0	140	98
ApproachDel:	10.3			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:   14    0   100    0    0     0    8  116     0    0   78    72
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            274
Minor Approach Volume:          114
Minor Approach Volume Threshold: 565
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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                Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound                        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R                      L  -  T  -  R
------------|---------------||---------------||East Bound--R---||---------------|
Control:        Stop Sign        Stop Sign                       Uncontrolled
Lanes:        0  0  1! 0  0   0  0  0  0  0                      0  0  0  1  0
Initial Vol:   40    0    95    0    0     0 0 Uncontrolled 0  0    0  140    98
                                              1  0 90
------------|---------------||---------------||---------------||---------------|
                                              17
Major Street Volume:            348
Minor Approach Volume:          135
Minor Approach Volume Threshold: 501
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.7			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.8			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:        1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol:  135    0     0     0    0    15    21    0   185     0    0     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            150
Minor Approach Volume:          206
Minor Approach Volume Threshold: 725
--------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


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                Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:        1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol:  214    0     0     0    0    24    18    0   170     0    0     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            238
Minor Approach Volume:          188
Minor Approach Volume Threshold: 602
--------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                  Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol:    0     0     0    0     0   118  153    0     0    0     0     0
ApproachDel:     xxxxxx           xxxxxx           10.0            xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=153]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=271]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                  Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol:    0     0     0    0     0   185  168    0     0    0     0     0
ApproachDel:     xxxxxx           xxxxxx           10.1            xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=168]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=353]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	6	0	130	0	0	0	2	23	0	0	117	1
ApproachDel:	9.1			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	8	0	142	0	0	0	7	20	0	0	182	3
ApproachDel:	9.2			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	0 20 7	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	20	0	8	0	23	6	120	23	0
ApproachDel:	xxxxxx			10.3			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	4	0	4	0	21	2	170	37	0
ApproachDel:	xxxxxx			10.4			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 27 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	9.8

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.2

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

```
*****************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
Initial Vol:    0  153     0     0  118     0     0     0     0    10     0    10
------------|---------------||---------------||---------------||---------------|
Major Street Volume:             271
Minor Approach Volume:           20
Minor Approach Volume Threshold: 568
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

```
*****************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
Initial Vol:    0  168     0     0  185     0     0     0     0    10     0    10
------------|---------------||---------------||---------------||---------------|
Major Street Volume:             353
Minor Approach Volume:           20
Minor Approach Volume Threshold: 497
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	75	0	6	0	22	31	17	48	0
ApproachDel:	xxxxxx			9.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	36	0	4	0	58	53	16	62	0
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33
ApproachDel:	9.5	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 75 0	0 44 80
ApproachDel:	9.6	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 75 0	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	55	6	0	0	11	16	22	0	105	0	0	0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	93	28	0	0	18	27	17	0	84	0	0	0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0
ApproachDel:	xxxxxx	11.8	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 411 15	79 130 0
ApproachDel:	xxxxxx	11.4	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Initial Vol:	0	0	0	19	0	186	0	454	9	250	96	0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1				1 0	1	0 0
Initial Vol:	0	0	0	15	1	280	0	414	15	79	130	0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19
ApproachDel:	11.6	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 1160 0	0 357 18
ApproachDel:	11.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 169 0	0 357 18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	64	2	2	5	3	33	15	25	82	7	21	3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	165	5	4	0	2	33	27	110	89	3	40	2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	11.6	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158
ApproachDel:	xxxxxx	13.1	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	0		0		0	104		0		0	4		116		0	0		132		77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	0	1!	0	0	0	1	0	0	0	0	0	0	1	0
Initial Vol:	0		0		0	82		0		5	5		92		0	0		250		158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      8.5      Worst Case Level Of Service: B[ 11.9]
********************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include         Include         Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0    0    94    0   10     0   23    9    73   25    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    94    0   10     0   23    9    73   25    0
Added Vol:      0    0    0     0   66    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    94   66   10     0   23    9    73   25    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0   107   75   11     0   26   10    83   28    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0   107   75   11     0   26   10    83   28    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   226  231   28  xxxx xxxx xxxxx    36 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   767  673 1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   735  636 1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 0.12 0.01  xxxx xxxx  xxxx  0.05 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx  0.0  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  8.5 xxxxx xxxx xxxxx   7.4 xxxx xxxxx
LOS by Move:    *    *    *     *    *    A     *    *    *     A    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   691 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.1 xxxx xxxxx xxxxx xxxx xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  12.1 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
Shared LOS:     *    *    *     B    *    *     *    *    *     A    *    *
ApproachDel:     xxxxxx           11.9            xxxxxx           xxxxxx
ApproachLOS:        *               B               *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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--------------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      9.1      Worst Case Level Of Service: C[ 16.6]
********************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include         Include         Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0    68    0    5     0   43   38   148   26    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    68    0    5     0   43   38   148   26    0
Added Vol:      0    0    0     0   84    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    68   84    5     0   43   38   148   26    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0    77   95    6     0   49   43   168   30    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    77   95    6     0   49   43   168   30    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   436  458   30  xxxx xxxx xxxxx    92 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   581  502 1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   527  441 1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 0.22 0.01  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx  0.0  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  8.4 xxxxx xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    *    *    *     *    *    A     *    *    *     A    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   475 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.6 xxxx xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  16.8 xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx
Shared LOS:     *    *    *     C    *    *     *    *    *     A    *    *
ApproachDel:     xxxxxx           16.6            xxxxxx           xxxxxx
ApproachLOS:        *               C               *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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AM Peak Hour 4            Mon Dec 29, 2008 05:39:40               Page 10-1
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-----------------------------------------------------------------------------

                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*****************************************************************************
Average Delay (sec/veh):      5.2      Worst Case Level Of Service: B[ 12.0]
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0   84     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   84   100     0    0     0     8  116     0     0   78    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    16   95   114     0    0     0     9  132     0     0   89    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   16   95   114     0    0     0     9  132     0     0   89    82
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  280  320   132  xxxx xxxx xxxxx   170 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  715  600   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    711  596   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.16  0.12  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  736 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.0 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:       12.0           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B               *                *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



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PM Peak Hour 4            Mon Dec 29, 2008 05:39:43               Page 10-1
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*****************************************************************************
Average Delay (sec/veh):      4.9      Worst Case Level Of Service: B[ 12.7]
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0   66     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40   66    95     0    0     0    17   93     0     0  140    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    45   75   108     0    0     0    19  106     0     0  159   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   45   75   108     0    0     0    19  106     0     0  159   111
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  359  415   106  xxxx xxxx xxxxx   270 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  644  531   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    636  523   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.14  0.11  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  697 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.7 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:       12.7           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B               *                *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```

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----------------------------------------------------------------------------------
----------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
**********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
**********************************************************************************
Average Delay (sec/veh):      9.0      Worst Case Level Of Service: B[ 10.7]
**********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135    0     0     0    0    15    21    0   185     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135    0     0     0    0    15    21    0   185     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  135    0     0     0    0    15    21    0   185     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   153    0     0     0    0    17    24    0   210     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  153    0     0     0    0    17    24    0   210     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   17 xxxx xxxxx  xxxx xxxx xxxxx   307  307     0  xxxx xxxx xxxxx
Potent Cap.: 1613 xxxx xxxxx  xxxx xxxx xxxxx   689  610   900  xxxx xxxx xxxxx
Move Cap.:   1613 xxxx xxxxx  xxxx xxxx xxxxx   639  552   900  xxxx xxxx xxxxx
Volume/Cap:  0.10 xxxx  xxxx  xxxx xxxx  xxxx  0.04 0.00  0.23  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  864 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.7 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            10.7            xxxxxx
ApproachLOS:        *                *                B                *
**********************************************************************************
Note: Queue reported is the number of cars per lane.
**********************************************************************************
```



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----------------------------------------------------------------------------------
----------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
**********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
**********************************************************************************
Average Delay (sec/veh):      8.6      Worst Case Level Of Service: B[ 10.8]
**********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     214    0     0     0    0    24    18    0   170     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  214    0     0     0    0    24    18    0   170     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  214    0     0     0    0    24    18    0   170     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   243    0     0     0    0    27    20    0   193     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  243    0     0     0    0    27    20    0   193     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   27 xxxx xxxxx  xxxx xxxx xxxxx   486  486     0  xxxx xxxx xxxxx
Potent Cap.: 1600 xxxx xxxxx  xxxx xxxx xxxxx   544  484   900  xxxx xxxx xxxxx
Move Cap.:   1600 xxxx xxxxx  xxxx xxxx xxxxx   480  411   900  xxxx xxxx xxxxx
Volume/Cap:  0.15 xxxx  xxxx  xxxx xxxx  xxxx  0.04 0.00  0.21  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.5 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  831 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            10.8            xxxxxx
ApproachLOS:        *                *                B                *
**********************************************************************************
Note: Queue reported is the number of cars per lane.
**********************************************************************************
```

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
********************************************************************************
Average Delay (sec/veh):      7.5       Worst Case Level Of Service: B[ 11.3]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   118   153    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   118   153    0     0     0    0     0
Added Vol:     66    0     0     0    0     0     0    0    84     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   66    0     0     0    0   118   153    0    84     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    75    0     0     0    0   134   174    0    95     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   75    0     0     0    0   134   174    0    95     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  134 xxxx xxxxx  xxxx xxxx xxxxx   150  150     0  xxxx xxxx xxxxx
Potent Cap.: 1463 xxxx xxxxx  xxxx xxxx xxxxx   847  745   900  xxxx xxxx xxxxx
Move Cap.:   1463 xxxx xxxxx  xxxx xxxx xxxxx   813  707   900  xxxx xxxx xxxxx
Volume/Cap:  0.05 xxxx  xxxx  xxxx xxxx  xxxx  0.21 0.00  0.11  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  842 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.3 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             11.3            xxxxxx
ApproachLOS:        *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
********************************************************************************
Average Delay (sec/veh):      6.8       Worst Case Level Of Service: B[ 11.8]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   185   168    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   185   168    0     0     0    0     0
Added Vol:     84    0     0     0    0     0     0    0    66     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   84    0     0     0    0   185   168    0    66     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    95    0     0     0    0   210   191    0    75     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   95    0     0     0    0   210   191    0    75     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  210 xxxx xxxxx  xxxx xxxx xxxxx   191  191     0  xxxx xxxx xxxxx
Potent Cap.: 1372 xxxx xxxxx  xxxx xxxx xxxxx   803  708   900  xxxx xxxx xxxxx
Move Cap.:   1372 xxxx xxxxx  xxxx xxxx xxxxx   760  658   900  xxxx xxxx xxxxx
Volume/Cap:  0.07 xxxx  xxxx  xxxx xxxx  xxxx  0.25 0.00  0.08  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  795 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.5 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             11.8            xxxxxx
ApproachLOS:        *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
AM Peak Hour 4          Mon Dec 29, 2008 05:39:40                Page 13-1
----------------------------------------------------------------------------
----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
****************************************************************************
Average Delay (sec/veh):      4.9      Worst Case Level Of Service: A[  9.5]
****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        6    0   130     0    0     0     2   23     0     0  117     1
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     6    0   130     0    0     0     2   23     0     0  117     1
Added Vol:       0    0    84     0    0     0     0    0     0     0   66     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     6    0   214     0    0     0     2   23     0     0  183     1
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      7    0   243     0    0     0     2   26     0     0  208     1
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     7    0   243     0    0     0     2   26     0     0  208     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  239  240    26  xxxx xxxx xxxxx   209 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  753  665  1055  xxxx xxxx xxxxx  1374 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    753  664  1055  xxxx xxxx xxxxx  1374 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.23  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1044 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.9 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.5          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A              *                *                *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
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PM Peak Hour 4          Mon Dec 29, 2008 05:39:43                Page 13-1
----------------------------------------------------------------------------
----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
****************************************************************************
Average Delay (sec/veh):      4.1      Worst Case Level Of Service: A[  9.6]
****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        8    0   142     0    0     0     7   26     0     0  182     3
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    0   142     0    0     0     7   26     0     0  182     3
Added Vol:       0    0    66     0    0     0     0    0     0     0   84     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     8    0   208     0    0     0     7   26     0     0  266     3
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      9    0   236     0    0     0     8   30     0     0  302     3
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9    0   236     0    0     0     8   30     0     0  302     3
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  349  351    30  xxxx xxxx xxxxx   306 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  652  577  1051  xxxx xxxx xxxxx  1267 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    649  573  1051  xxxx xxxx xxxxx  1267 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.22  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1027 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.9 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.6          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A              *                *                *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
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                       Level Of Service Computation Report
             2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      6.5      Worst Case Level Of Service: B[ 11.6]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    20    0     8     0   23     6   120   23     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0     8     0   23     6   120   23     0
Added Vol:      0    0     0     0    0     0     0    0     0    66    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    20    0     8     0   23     6   186   23     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    23    0     9     0   26     7   211   26     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    23    0     9     0   26     7   211   26     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   478  482    26  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   549  487  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   486  414  1055  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.05 0.00  0.01  xxxx xxxx  xxxx  0.13 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.5 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  575 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.5 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 11.6 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            11.6            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      6.3      Worst Case Level Of Service: B[ 11.8]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0     4    0     4     0   27     2   170   37     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     4    0     4     0   27     2   170   37     0
Added Vol:      0    0     0     0    0     0     0    0     0    84    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     4    0     4     0   27     2   254   37     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     5    0     5     0   31     2   289   42     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     5    0     5     0   31     2   289   42     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   651  652    42  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   436  390  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   364  306  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  xxxx xxxx  xxxx  0.18 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.7 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  538 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx   0.7 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 11.8 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            11.8            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 Geyserville Avenue at Hamilton Lane

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: A[9.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	153	0	0	118	0	0	0	0	10	0	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	153	0	0	118	0	0	0	0	10	0	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	153	0	0	118	0	0	0	0	10	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	174	0	0	134	0	0	0	0	11	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	174	0	0	134	0	0	0	0	11	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	308	308	174
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	688	609	875
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	688	609	875
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	770	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.8	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	A	*
ApproachDel:		xxxxxx			xxxxxx			xxxxxx			9.8	
ApproachLOS:		*			*			*			A	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 Geyserville Avenue at Hamilton Lane

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[10.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	168	0	0	185	0	0	0	0	10	0	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	168	0	0	185	0	0	0	0	10	0	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	168	0	0	185	0	0	0	0	10	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	191	0	0	210	0	0	0	0	11	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	191	0	0	210	0	0	0	0	11	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	401	401	191
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	541	856
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	541	856
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	712	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.2	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	B	*
ApproachDel:		xxxxxx			xxxxxx			xxxxxx			10.2	
ApproachLOS:		*			*			*			B	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #16 Highway 101 sb ramp at Canyon Road

Average Delay (sec/veh): 4.6 Worst Case Level Of Service: A[9.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	75	0	6	0	22	31	17	48	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	75	0	6	0	22	31	17	48	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	75	0	6	0	22	31	17	48	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	85	0	7	0	25	35	19	55	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	85	0	7	0	25	35	19	55	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	136	153	55	xxxx	xxxx	xxxxx	60	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	862	742	1018	xxxx	xxxx	xxxxx	1556	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	854	733	1018	xxxx	xxxx	xxxxx	1556	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.10	0.00	0.01	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	865	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	9.7	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			9.7			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #16 Highway 101 sb ramp at Canyon Road

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: A[9.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	36	0	4	0	58	53	16	62	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	36	0	4	0	58	53	16	62	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	36	0	4	0	58	53	16	62	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	41	0	5	0	66	60	18	70	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	41	0	5	0	66	60	18	70	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	203	233	70	xxxx	xxxx	xxxxx	126	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	790	671	998	xxxx	xxxx	xxxxx	1473	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	783	662	998	xxxx	xxxx	xxxxx	1473	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.05	0.00	0.00	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	800	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	9.8	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

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                  Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):      3.0      Worst Case Level Of Service: A[  9.5]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29    0    40     0    0     0    13   93     0     0   42    33
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    33    0    45     0    0     0    15  106     0     0   48    38
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   33    0    45     0    0     0    15  106     0     0   48    38
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  202  220   106  xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  791  682   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    785  675   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.05  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  875 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.5          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A              *                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
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---------------------------------------------------------------------------
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                  Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):      3.3      Worst Case Level Of Service: A[  9.6]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   28    3    58     0    0     0    24   75     0     0   44    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    32    3    66     0    0     0    27   85     0     0   50    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   32    3    66     0    0     0    27   85     0     0   50    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  235  281    85  xxxx xxxx xxxxx   141 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  757  631   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    746  619   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.01  0.07  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  876 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.6          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A              *                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.150
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.4
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	63	7	0	0	13	18	25	0	119	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	63	7	0	0	13	18	25	0	119	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	63	7	0	0	13	18	25	0	119	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	xxxx	0.83	0.00	0.00	0.00
Final Sat.:	720	79	0	0	364	529	167	0	798	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	xxxx	xxxx	0.03	0.03	0.15	0.00	0.15	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.8	7.8	0.0	0.0	7.0	7.0	7.3	7.3	7.3	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:	7.8			7.0			7.3			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	7.8			7.0			7.3			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.169
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.7
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	28	0	0	18	27	17	0	84	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	106	32	0	0	20	31	19	0	95	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	32	0	0	20	31	19	0	95	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	106	32	0	0	20	31	19	0	95	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.17	0.00	0.83	0.00	0.00	0.00
Final Sat.:	625	188	0	0	357	536	152	0	753	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	xxxx	xxxx	0.06	0.06	0.13	xxxx	0.13	xxxx	xxxx	xxxx
Crit Moves:		****				****	****					
Delay/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	*	A	*	*	*
ApproachDel:	8.2			7.1			7.4			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	8.2			7.1			7.4			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
Intersection #20 Geyserville Avevnue at Private Road
******************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28     0     0   27     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28     0     0   27     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   28     0     0   27     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   32     0     0   31     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   32     0     0   31     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx    63   63    32
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```


Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
Intersection #20 Geyserville Avevnue at Private Road
******************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45     0     0   45     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45     0     0   45     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   45     0     0   45     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   51     0     0   51     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   51     0     0   51     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   102  102    51
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	32	0	0	31	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	32	0	0	31	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	51	0	0	51	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	51	0	0	51	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 8.2 Worst Case Level Of Service: C[23.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	19	0	186	0	454	9	250	96	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	19	0	186	0	454	9	250	96	0
Added Vol:	0	0	0	66	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	85	0	186	0	454	9	250	96	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	97	0	211	0	516	10	284	109	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	97	0	211	0	516	10	284	109	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1198	1203	109	xxxx	xxxx	xxxxx	526	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	207	186	950	xxxx	xxxx	xxxxx	1051	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	164	136	950	xxxx	xxxx	xxxxx	1051	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.59	0.00	0.22	xxxx	xxxx	xxxx	0.27	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	1.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.9	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	164	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	3.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	54.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			23.9			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: B[13.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	15	1	280	0	414	15	79	130	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	15	1	280	0	414	15	79	130	0
Added Vol:	0	0	0	84	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	99	1	280	0	414	15	79	130	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	113	1	318	0	470	17	90	148	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	113	1	318	0	470	17	90	148	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	806	815	148	xxxx	xxxx	xxxxx	488	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	354	314	904	xxxx	xxxx	xxxxx	1086	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	332	288	904	xxxx	xxxx	xxxxx	1086	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.34	0.00	0.35	xxxx	xxxx	xxxx	0.08	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.6	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.1	xxxxx	xxxx	xxxxx	8.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	331	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	1.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	21.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	C	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.8			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: B[12.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	5	2	137	0	0	0	254	224	0	0	342	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	2	137	0	0	0	254	224	0	0	342	19
Added Vol:	0	0	0	0	0	0	0	66	0	0	0	84
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	5	2	137	0	0	0	254	290	0	0	342	103
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	6	2	156	0	0	0	289	330	0	0	389	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	6	2	156	0	0	0	289	330	0	0	389	117
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1354	1413	330	xxxx	xxxx	xxxxx	506	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	167	139	717	xxxx	xxxx	xxxxx	1069	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	132	102	717	xxxx	xxxx	xxxxx	1069	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.04	0.02	0.22	xxxx	xxxx	xxxx	0.27	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.8	xxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	11.4	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	122	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	36.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	E	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	12.6			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: B[12.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	9	0	196	0	0	0	250	169	0	0	357	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	0	196	0	0	0	250	169	0	0	357	18
Added Vol:	0	0	0	0	0	0	0	84	0	0	0	66
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	0	196	0	0	0	250	253	0	0	357	84
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	10	0	223	0	0	0	284	288	0	0	406	95
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	10	0	223	0	0	0	284	288	0	0	406	95
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1309	1357	288	xxxx	xxxx	xxxxx	501	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	177	150	756	xxxx	xxxx	xxxxx	1074	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	141	111	756	xxxx	xxxx	xxxxx	1074	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.07	0.00	0.29	xxxx	xxxx	xxxx	0.26	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.2	xxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	11.7	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	141	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	32.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	D	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	12.6			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.217
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.3
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0 1	0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	55	83	78	91	0	0	0	0	90	0	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	55	83	78	91	0	0	0	0	90	0	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	55	83	78	91	0	0	0	0	90	0	63
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	339	515	362	420	0	0	0	0	458	0	319
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.16	0.16	0.22	0.22	xxxx	xxxx	xxxx	xxxx	0.20	xxxx	0.20
Crit Moves:		****		****								****
Delay/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:		7.8			8.7			xxxxxx			8.4	
Delay Adj:		1.00			1.00			xxxxx			1.00	
ApprAdjDel:		7.8			8.7			xxxxxx			8.4	
LOS by Appr:		A			A			*			A	
AllWayAvgQ:	0.2	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.317
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0 1	0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	88	86	63	76	0	0	0	0	127	0	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	88	86	63	76	0	0	0	0	127	0	122
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	88	86	63	76	0	0	0	0	127	0	122
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	400	394	327	399	0	0	0	0	401	0	384
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.19	0.19	xxxx	xxxx	xxxx	xxxx	0.32	xxxx	0.32
Crit Moves:		****			****							
Delay/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:		8.5			8.8			xxxxxx			9.3	
Delay Adj:		1.00			1.00			xxxxx			1.00	
ApprAdjDel:		8.5			8.8			xxxxxx			9.3	
LOS by Appr:		A			A			*			A	
AllWayAvgQ:	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.4	0.4	0.4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.151
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.5
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	73	2	2	6	3	38	17	28	93	8	24	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	2	2	6	3	38	17	28	93	8	24	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	73	2	2	6	3	38	17	28	93	8	24	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	733	23	23	109	65	717	113	188	616	184	552	79
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.05	0.05	0.05	0.15	0.15	0.15	0.04	0.04	0.04
Crit Moves:		****				****		****			****	
Delay/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		7.9			7.1			7.5			7.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		7.9			7.1			7.5			7.5	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.258
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.4
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33	27	19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	27	19	89	3	40	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	188	6	5	0	2	38	31	22	101	3	45	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	6	5	0	2	38	31	22	101	3	45	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	6	5	0	2	38	31	22	101	3	45	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20	0.14	0.66	0.07	0.89	0.04
Final Sat.:	726	22	18	0	49	803	166	117	548	50	662	33
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.26	xxxx	0.05	0.05	0.18	0.18	0.18	0.07	0.07	0.07
Crit Moves:		****				****	****				****	
Delay/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
LOS by Move:	A	A	A	*	A	A	A	A	A	A	A	A
ApproachDel:		9.1			7.2			8.0			7.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.1			7.2			8.0			7.9	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*******************************************************************************
Average Delay (sec/veh):      2.9      Worst Case Level Of Service: B[ 11.6]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   1  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0    0  104    0    0     4  116    0     0  132   77
Growth Adj:   1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     0    0    0  104    0    0     4  116    0     0  132   77
Added Vol:       0    0    0    0    0    0     0    0    0     0    0    0
PasserByVol:     0    0    0    0    0    0     0    0    0     0    0    0
Initial Fut:     0    0    0  104    0    0     4  116    0     0  132   77
User Adj:     1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88 0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:      0    0    0  118    0    0     5  132    0     0  150   88
Reduct Vol:      0    0    0    0    0    0     0    0    0     0    0    0
FinalVolume:     0    0    0  118    0    0     5  132    0     0  150   88
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   335 xxxx xxxxx   238 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   665 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   663 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.18 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.6 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  11.6 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     B    *    *     A    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    *     *    *    *     A    *    *     *    *    *
ApproachDel:     xxxxxx           11.6            xxxxxx           xxxxxx
ApproachLOS:       *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*******************************************************************************
Average Delay (sec/veh):      2.0      Worst Case Level Of Service: B[ 13.1]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0    0   82    0    5     5   92    0     0  250  158
Growth Adj:   1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     0    0    0   82    0    5     5   92    0     0  250  158
Added Vol:       0    0    0    0    0    0     0    0    0     0    0    0
PasserByVol:     0    0    0    0    0    0     0    0    0     0    0    0
Initial Fut:     0    0    0   82    0    5     5   92    0     0  250  158
User Adj:     1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88 0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:      0    0    0   93    0    6     6  105    0     0  284  180
Reduct Vol:      0    0    0    0    0    0     0    0    0     0    0    0
FinalVolume:     0    0    0   93    0    6     6  105    0     0  284  180
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   490  490   374   464 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   541  482   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   539  479   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.17 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     *    *    *     A    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  545 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.7 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 13.1 xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    *     *    B    *     A    *    *     *    *    *
ApproachDel:     xxxxxx           13.1            xxxxxx           xxxxxx
ApproachLOS:       *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Scenario:	AM Peak Hour 5
Command:	AM Peak Hour 5
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 5
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 5

Scenario Report

Scenario Report

Scenario:	PM Peak Hour 5
Command:	PM Peak Hour 5
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 5
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 5

Trip Generation Report

Forecast for AM Peak Hour 5

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
5	Route 5	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
Zone 5 Subtotal						84	66	150	100.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 5

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
5	Route 5	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 5 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Turning Movement Report

AM Peak Hour 5

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	94	66	10	0	23	9	73	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	14	84	100	0	0	0	8	116	0	0	78	72	472
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84

Turning Movement Report

PM Peak Hour 5

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	184	237	0	0	0	0	0	421
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	6	0	214	0	0	0	2	23	0	0	183	1	429
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	20	0	8	0	23	6	186	23	0	266
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	84	0	0	0	0	0	0	66	0	0	150
Total	0	153	84	0	118	0	0	0	0	76	0	10	441
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	269	234	0	0	0	0	0	503
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	8	0	208	0	0	0	7	26	0	0	266	3	518
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	4	0	4	0	27	2	254	37	0	328
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	66	0	0	0	0	0	0	84	0	0	150
Total	0	168	66	0	185	0	0	0	0	94	0	10	523
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

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Link Volume Report
AM Peak Hour 5

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	148	148	170	0	170	32	35	67	98	117	215	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	198	0	198	0	164	164	124	92	216	150	216	366	944
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168

Link Volume Report
PM Peak Hour 5

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	184	237	421	237	184	421	0	0	0	842
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	220	0	220	0	3	3	25	189	214	184	237	421	858
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	192	192	28	0	28	29	31	60	209	43	252	532
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	84	66	150	0	0	0	0	0	0	66	84	150	300
Total	237	194	431	118	163	281	0	0	0	86	84	170	882
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	269	234	503	234	269	503	0	0	0	1006
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	216	0	216	0	10	10	33	274	307	269	234	503	1036
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	256	256	8	0	8	29	41	70	291	31	322	656
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	66	84	150	0	0	0	0	0	0	84	66	150	300
Total	234	279	513	185	178	363	0	0	0	104	66	170	1046
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	10.5	0.000	B	11.9	0.000	+ 1.343 D/V
# 5 Highway 101 nb at Lytton Sprin	A	9.7	0.000	B	12.0	0.000	+ 2.299 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.7	0.000	B	10.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	A	10.0	0.000	B	10.7	0.000	+ 0.744 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.1	0.000	A	9.5	0.000	+ 0.479 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.3	0.000	B	11.6	0.000	+ 1.286 D/V
# 15 Geyserville Avenue at Hamilton	A	9.8	0.000	B	11.4	0.000	+ 1.552 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.7	0.000	A	9.7	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.5	0.000	A	9.5	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.4	0.150	A	7.4	0.150	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.8	0.000	C	23.9	0.000	+12.116 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.6	0.000	B	12.6	0.000	+ 1.012 D/V
# 31 Geyserville Avenue at Highway	A	8.3	0.217	A	8.3	0.217	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.5	0.151	A	7.5	0.151	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	11.6	0.000	B	11.6	0.000	+ 0.000 D/V

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	12.7	0.000	C	16.6	0.000	+ 3.865 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.3	0.000	B	12.7	0.000	+ 2.360 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.8	0.000	B	10.8	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.1	0.000	B	10.7	0.000	+ 0.595 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.2	0.000	A	9.6	0.000	+ 0.401 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.4	0.000	B	11.8	0.000	+ 1.422 D/V
# 15 Geyserville Avenue at Hamilton	B	10.2	0.000	B	12.5	0.000	+ 2.303 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.6	0.000	A	9.6	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.169	A	7.7	0.169	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.4	0.000	B	13.8	0.000	+ 2.422 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.4	0.000	B	12.6	0.000	+ 1.231 D/V
# 31 Geyserville Avenue at Highway	A	8.9	0.317	A	8.9	0.317	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	8.4	0.258	A	8.4	0.258	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0
ApproachDel:	xxxxxx	10.5	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #2: [approach volume=104]

FAIL - Approach volume less than 150 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=234]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 43 38	148 26 0
ApproachDel:	xxxxxx	12.7	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]

FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #2: [approach volume=73]

FAIL - Approach volume less than 150 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=328]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
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*********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Peak Hour Volume Signal Warrant Report [Urban]
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    0  1  0  0  0
Initial Vol:    0     0     0   94     0    10     0    23     9   73    25     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            130
Minor Approach Volume:          104
Minor Approach Volume Threshold: 934
---------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


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                Peak Hour Volume Signal Warrant Report [Urban]
*********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound                        West Bound
Movement:    L  -  T  -  R    L  -  T  -  R                     L  -  T  -  R
------------|---------------||---------------||East Bound--R---||---------------|
Control:        Stop Sign        Stop Sign                        Uncontrolled
Lanes:       0  0  0  0  0    0  1  0  0  1                     0  1  0  0  0
                                              Uncontrolled
Initial Vol:    0     0     0   68     0     5 0  0  0 43 0 38   148    26     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            255           0
Minor Approach Volume:          73
Minor Approach Volume Threshold: 722
---------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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*****************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:    14     0   100     0     0     0     8   116     0     0    78    72
Peak Hour Delay Signal Warrant Report
ApproachDel:      9.7          xxxxxx          xxxxxx          xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]

Signal Warrant Rule #2: [approach volume=114]
FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=388]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

FAIL - Total volume less than 650 for intersection
-----------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
with less than four approaches.
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Peak Hour Delay Signal Warrant Report
*****************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound                        West Bound
Movement:    L  -  T  -  R   L  -  T  -  R                     L  -  T  -  R
------------|---------------||---------------||East Bound  L  -  T  -  R---||---------------|
Control:        Stop Sign        Stop Sign                        Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0                     0  0  0  1  0
                                              Uncontrolled
Initial Vol:    40     0    95     0     0     0 0  1  0 90  0  0     0   140    98
ApproachDel:     10.3          xxxxxx                           xxxxxx
                                              17
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]xxxxxx
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-----------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	17 93 0	0 140 98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.7			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.8			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Peak Hour Volume Signal Warrant Report [Urban]
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol: 135    0     0     0    0    15    21    0   185     0    0     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            150
Minor Approach Volume:          206
Minor Approach Volume Threshold: 725
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Peak Hour Volume Signal Warrant Report [Urban]
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol: 214    0     0     0    0    24    18    0   170     0    0     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            238
Minor Approach Volume:          188
Minor Approach Volume Threshold: 602
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
Initial Vol:    0    0    0    0    0  118  153    0    0    0    0    0
ApproachDel:     xxxxxx           xxxxxx           10.0            xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=153]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=271]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
Initial Vol:    0    0    0    0    0  185  168    0    0    0    0    0
ApproachDel:     xxxxxx           xxxxxx           10.1            xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=168]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=353]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1
ApproachDel:	9.1	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3
ApproachDel:	9.2	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	20	0	8	0	23	6	120	23	0
ApproachDel:	xxxxxx			10.3			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	4	0	4	0	27	2	170	37	0
ApproachDel:	xxxxxx			10.4			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 27 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                      Peak Hour Delay Signal Warrant Report
*********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  0  1  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
Initial Vol:    0  153    0     0  118    0     0    0    0    10    0   10
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             9.8
------------|---------------||---------------||---------------||---------------|
Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
---------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


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                      Peak Hour Delay Signal Warrant Report
*********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  0  1  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
Initial Vol:    0  168    0     0  185    0     0    0    0    10    0   10
ApproachDel:    xxxxxx           xxxxxx           xxxxxx            10.2
------------|---------------||---------------||---------------||---------------|
Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
---------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 0	1!	0 0	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	75	0	6	0	22	31	17	48	0
ApproachDel:	xxxxxx			9.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 0	1!	0 0	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	36	0	4	0	58	53	16	62	0
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33
ApproachDel:	9.5	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 75 0	0 44 80
ApproachDel:	9.6	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 75 0	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	55 6 0	0 11 16	22 0 105	0 0 0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	93 28 0	0 18 27	17 0 84	0 0 0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	19	0	186	0	454	9	250	96	0
ApproachDel:	xxxxxx			11.8			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	15	1	280	0	414	15	79	130	0
ApproachDel:	xxxxxx			11.4			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Initial Vol:	0	0	0	19	0	186	0	454	9	250	96	0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Initial Vol:	0	0	0	15	1	280	0	414	15	79	130	0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19
ApproachDel:	11.6			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	9	0	196	0	0	0	250	169	0	0	357	18
ApproachDel:	11.4			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 1160 0	0 357 18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	64 2 2	5 3 33	15 25 82	7 21 3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 1 0	[illegible] 0	0 0 1! 0 0
Initial Vol:	165 5 4	0 2 33	27 [illegible] 89	3 40 2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	11.6	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158
ApproachDel:	xxxxxx	13.1	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      8.5      Worst Case Level Of Service: B[ 11.9]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        0    0    0    94    0   10     0   23    9    73   25    0
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     0    0    0    94    0   10     0   23    9    73   25    0
Added Vol:       0    0    0     0   66    0     0    0    0     0    0    0
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:     0    0    0    94   66   10     0   23    9    73   25    0
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:      0    0    0   107   75   11     0   26   10    83   28    0
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:     0    0    0   107   75   11     0   26   10    83   28    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   226  231   28  xxxx xxxx xxxxx    36 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   767  673 1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   735  636 1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 0.12 0.01  xxxx xxxx  xxxx  0.05 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx  0.0  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  8.5 xxxxx xxxx xxxxx   7.4 xxxx xxxxx
LOS by Move:     *    *    *     *    *    A     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   691 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.1 xxxx xxxxx xxxxx xxxx xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  12.1 xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
Shared LOS:      *    *    *     B    *    *     *    *    *     A    *    *
ApproachDel:      xxxxxx            11.9            xxxxxx           xxxxxx
ApproachLOS:         *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      9.1      Worst Case Level Of Service: C[ 16.6]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0    0    68    0    5     0   43   38   148   26    0
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     0    0    0    68    0    5     0   43   38   148   26    0
Added Vol:       0    0    0     0   84    0     0    0    0     0    0    0
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:     0    0    0    68   84    5     0   43   38   148   26    0
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:      0    0    0    77   95    6     0   49   43   168   30    0
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:     0    0    0    77   95    6     0   49   43   168   30    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   436  458   30  xxxx xxxx xxxxx    92 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   581  502 1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   527  441 1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 0.22 0.01  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx  0.0  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  8.4 xxxxx xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:     *    *    *     *    *    A     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   475 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.6 xxxx xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  16.8 xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx
Shared LOS:      *    *    *     C    *    *     *    *    *     A    *    *
ApproachDel:      xxxxxx            16.6            xxxxxx           xxxxxx
ApproachLOS:         *                C                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      5.2       Worst Case Level Of Service: B[ 12.0]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0   84     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   84   100     0    0     0     8  116     0     0   78    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    16   95   114     0    0     0     9  132     0     0   89    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   16   95   114     0    0     0     9  132     0     0   89    82
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  280  320   132  xxxx xxxx xxxxx   170 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  715  600   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    711  596   923  xxxx xxxx xxxxx  1419 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.16  0.12  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  736 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.0 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      12.0           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      4.9       Worst Case Level Of Service: B[ 12.7]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0   66     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40   66    95     0    0     0    17   93     0     0  140    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    45   75   108     0    0     0    19  106     0     0  159   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   45   75   108     0    0     0    19  106     0     0  159   111
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  359  415   106  xxxx xxxx xxxxx   270 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  644  531   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    636  523   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.14  0.11  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  697 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.7 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      12.7           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
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------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
******************************************************************************
Average Delay (sec/veh):      9.0      Worst Case Level Of Service: B[ 10.7]
******************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135    0    0     0    0   15    21    0  185     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  135    0    0     0    0   15    21    0  185     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  135    0    0     0    0   15    21    0  185     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:   153    0    0     0    0   17    24    0  210     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:  153    0    0     0    0   17    24    0  210     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   17 xxxx xxxxx  xxxx xxxx xxxxx   307  307    0  xxxx xxxx xxxxx
Potent Cap.: 1613 xxxx xxxxx  xxxx xxxx xxxxx   689  610  900  xxxx xxxx xxxxx
Move Cap.:   1613 xxxx xxxxx  xxxx xxxx xxxxx   639  552  900  xxxx xxxx xxxxx
Volume/Cap:  0.10 xxxx  xxxx  xxxx xxxx  xxxx  0.04 0.00 0.23  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *    *     *    *    *     *    *    *     *    *    *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  864 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.7 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    B    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx            10.7            xxxxxx
ApproachLOS:        *                *                B                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
******************************************************************************
Average Delay (sec/veh):      8.6      Worst Case Level Of Service: B[ 10.8]
******************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     214    0    0     0    0   24    18    0  170     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  214    0    0     0    0   24    18    0  170     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  214    0    0     0    0   24    18    0  170     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:   243    0    0     0    0   27    20    0  193     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:  243    0    0     0    0   27    20    0  193     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   27 xxxx xxxxx  xxxx xxxx xxxxx   486  486    0  xxxx xxxx xxxxx
Potent Cap.: 1600 xxxx xxxxx  xxxx xxxx xxxxx   544  484  900  xxxx xxxx xxxxx
Move Cap.:   1600 xxxx xxxxx  xxxx xxxx xxxxx   480  411  900  xxxx xxxx xxxxx
Volume/Cap:  0.15 xxxx  xxxx  xxxx xxxx  xxxx  0.04 0.00 0.21  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.5 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *    *     *    *    *     *    *    *     *    *    *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  831 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    B    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx            10.8            xxxxxx
ApproachLOS:        *                *                B                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*********************************************************************************
Average Delay (sec/veh):      6.0      Worst Case Level Of Service: B[ 10.7]
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  1   1  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0    0    0    0  118   153    0    0    0    0    0
Growth Adj:   1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:     0    0    0    0    0  118   153    0    0    0    0    0
Added Vol:       0    0    0    0    0   66    84    0    0    0    0    0
PasserByVol:     0    0    0    0    0    0     0    0    0    0    0    0
Initial Fut:     0    0    0    0    0  184   237    0    0    0    0    0
User Adj:     1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88 0.88 0.88 0.88  0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:      0    0    0    0    0  209   269    0    0    0    0    0
Reduct Vol:      0    0    0    0    0    0     0    0    0    0    0    0
FinalVolume:     0    0    0    0    0  209   269    0    0    0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.30 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.3 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     *    *    *     B    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:      xxxxxx           xxxxxx            10.7            xxxxxx
ApproachLOS:         *                *                B                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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---------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*********************************************************************************
Average Delay (sec/veh):      5.0      Worst Case Level Of Service: B[ 10.7]
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  1   1  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0    0    0    0  185   168    0    0    0    0    0
Growth Adj:   1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:     0    0    0    0    0  185   168    0    0    0    0    0
Added Vol:       0    0    0    0    0   84    66    0    0    0    0    0
PasserByVol:     0    0    0    0    0    0     0    0    0    0    0    0
Initial Fut:     0    0    0    0    0  269   234    0    0    0    0    0
User Adj:     1.00 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88 0.88 0.88 0.88  0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:      0    0    0    0    0  306   266    0    0    0    0    0
Reduct Vol:      0    0    0    0    0    0     0    0    0    0    0    0
FinalVolume:     0    0    0    0    0  306   266    0    0    0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.30 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.2 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     *    *    *     B    *    *     *    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:      xxxxxx           xxxxxx            10.7            xxxxxx
ApproachLOS:         *                *                B                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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AM Peak Hour 5            Mon Dec 29, 2008 05:39:46              Page 13-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      4.9       Worst Case Level Of Service: A[  9.5]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        6    0   130     0    0     0     2   23     0     0  117     1
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     6    0   130     0    0     0     2   23     0     0  117     1
Added Vol:       0    0    84     0    0     0     0    0     0     0   66     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     6    0   214     0    0     0     2   23     0     0  183     1
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      7    0   243     0    0     0     2   26     0     0  208     1
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     7    0   243     0    0     0     2   26     0     0  208     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  239  240    26  xxxx xxxx xxxxx   209 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  753  665  1055  xxxx xxxx xxxxx  1374 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    753  664  1055  xxxx xxxx xxxxx  1374 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.23  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx 1044 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.9 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.5           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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PM Peak Hour 5            Mon Dec 29, 2008 05:39:49              Page 13-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      4.1       Worst Case Level Of Service: A[  9.6]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        8    0   142     0    0     0     7   26     0     0  182     3
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    0   142     0    0     0     7   26     0     0  182     3
Added Vol:       0    0    66     0    0     0     0    0     0     0   84     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     8    0   208     0    0     0     7   26     0     0  266     3
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      9    0   236     0    0     0     8   30     0     0  302     3
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9    0   236     0    0     0     8   30     0     0  302     3
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  349  351    30  xxxx xxxx xxxxx   306 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  652  577  1051  xxxx xxxx xxxxx  1267 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    649  573  1051  xxxx xxxx xxxxx  1267 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.22  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx 1027 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.9 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Average Delay (sec/veh): 6.5 Worst Case Level Of Service: B[11.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 0	1!	0 0	0 0	0	1 0	0 1	0	0 0
Volume Module: >> Count Date: 17 May 2007 <<												
Base Vol:	0	0	0	20	0	8	0	23	6	120	23	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	20	0	8	0	23	6	120	23	0
Added Vol:	0	0	0	0	0	0	0	0	0	66	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	20	0	8	0	23	6	186	23	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	23	0	9	0	26	7	211	26	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	23	0	9	0	26	7	211	26	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	478	482	26	xxxx	xxxx	xxxxx	33	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	549	487	1055	xxxx	xxxx	xxxxx	1592	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	486	414	1055	xxxx	xxxx	xxxxx	1592	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.05	0.00	0.01	xxxx	xxxx	xxxx	0.13	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	575	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx	0.5	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	11.6	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	*	*	*	A	*	*
ApproachDel:		xxxxxx			11.6			xxxxxx			xxxxxx	
ApproachLOS:		*			B			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Average Delay (sec/veh): 6.3 Worst Case Level Of Service: B[11.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 0	1!	0 0	0 0	0	1 0	0 1	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	4	0	4	0	27	2	170	37	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	4	0	4	0	27	2	170	37	0
Added Vol:	0	0	0	0	0	0	0	0	0	84	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	4	0	4	0	27	2	254	37	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	5	0	5	0	31	2	289	42	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	5	0	5	0	31	2	289	42	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	651	652	42	xxxx	xxxx	xxxxx	33	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	436	390	1034	xxxx	xxxx	xxxxx	1592	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	364	306	1034	xxxx	xxxx	xxxxx	1592	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.00	xxxx	xxxx	xxxx	0.18	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	538	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	xxxxx	xxxx	xxxxx	0.7	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	11.8	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	*	*	*	A	*	*
ApproachDel:		xxxxxx			11.8			xxxxxx			xxxxxx	
ApproachLOS:		*			B			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 Geyserville Avenue at Hamilton Lane

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: B[11.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	153	0	0	118	0	0	0	0	10	0	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	153	0	0	118	0	0	0	0	10	0	10
Added Vol:	0	0	84	0	0	0	0	0	0	66	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	153	84	0	118	0	0	0	0	76	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	174	95	0	134	0	0	0	0	86	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	174	95	0	134	0	0	0	0	86	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	356	356	222
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	646	573	823
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	646	573	823
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.13	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	663	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.4	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.4		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 Geyserville Avenue at Hamilton Lane

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: B[12.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	168	0	0	185	0	0	0	0	10	0	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	168	0	0	185	0	0	0	0	10	0	10
Added Vol:	0	0	66	0	0	0	0	0	0	84	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	168	66	0	185	0	0	0	0	94	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	191	75	0	210	0	0	0	0	107	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	191	75	0	210	0	0	0	0	107	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	439	439	228
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	579	515	816
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	579	515	816
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.18	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	596	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.5	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.5		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      4.6       Worst Case Level Of Service: A[  9.7]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0    0    75    0    6     0   22   31    17   48    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    75    0    6     0   22   31    17   48    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    75    0    6     0   22   31    17   48    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0    85    0    7     0   25   35    19   55    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    85    0    7     0   25   35    19   55    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   136  153   55  xxxx xxxx xxxxx    60 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   862  742 1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   854  733 1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.10 0.00 0.01  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  865 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.7 xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
Shared LOS:     *    *    *     *    A    *     *    *    *     A    *    *
ApproachDel:     xxxxxx             9.7            xxxxxx           xxxxxx
ApproachLOS:        *                A                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      2.2       Worst Case Level Of Service: A[  9.8]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0    36    0    4     0   58   53    16   62    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    36    0    4     0   58   53    16   62    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    36    0    4     0   58   53    16   62    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0    41    0    5     0   66   60    18   70    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    41    0    5     0   66   60    18   70    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   203  233   70  xxxx xxxx xxxxx   126 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   790  671  998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   783  662  998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.05 0.00 0.00  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  800 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.8 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *    *     *    A    *     *    *    *     A    *    *
ApproachDel:     xxxxxx             9.8            xxxxxx           xxxxxx
ApproachLOS:        *                A                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      3.0      Worst Case Level Of Service: A[  9.5]
********************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include         Include         Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29    0    40     0    0     0    13   93     0     0   42    33
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    33    0    45     0    0     0    15  106     0     0   48    38
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   33    0    45     0    0     0    15  106     0     0   48    38
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  202  220   106  xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  791  682   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    785  675   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.05  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  875 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.5          xxxxxx          xxxxxx          xxxxxx
ApproachLOS:          A              *               *               *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      3.3      Worst Case Level Of Service: A[  9.6]
********************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include         Include         Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   28    3    58     0    0     0    24   75     0     0   44    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    32    3    66     0    0     0    27   85     0     0   50    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   32    3    66     0    0     0    27   85     0     0   50    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  235  281    85  xxxx xxxx xxxxx   141 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  757  631   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    746  619   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.01  0.07  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  876 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.6          xxxxxx          xxxxxx          xxxxxx
ApproachLOS:          A              *               *               *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
                        Level Of Service Computation Report
               2000 HCM 4-Way Stop Method (Future Volume Alternative)
**********************************************************************
Intersection #18 Geyserville Avenue at Canyon Road
**********************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.150
Loss Time (sec):       0 (Y+R=4.0 sec) Average Delay (sec/veh):       7.4
Optimal Cycle:         0              Level Of Service:                 A
**********************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign       Stop Sign       Stop Sign
Rights:         Include         Include         Include         Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       0  1  0  0  0   0  0  0  1  0   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      55    6    0    0   11   16   22    0  105    0    0    0
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   55    6    0    0   11   16   22    0  105    0    0    0
Added Vol:      0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   55    6    0    0   11   16   22    0  105    0    0    0
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:    63    7    0    0   13   18   25    0  119    0    0    0
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   63    7    0    0   13   18   25    0  119    0    0    0
PCE Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:   63    7    0    0   13   18   25    0  119    0    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       0.90 0.10 0.00 0.00 0.41 0.59 0.17 xxxx 0.83 0.00 0.00 0.00
Final Sat.:   720   79    0    0  364  529  167    0  798    0    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.09 xxxx xxxx 0.03 0.03 0.15 0.00 0.15 xxxx xxxx xxxx
Crit Moves:       ****           ****      ****
Delay/Veh:    7.8  7.8  0.0  0.0  7.0  7.0  7.3  7.3  7.3  0.0  0.0  0.0
Delay Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:   7.8  7.8  0.0  0.0  7.0  7.0  7.3  7.3  7.3  0.0  0.0  0.0
LOS by Move:    A    A    *    *    A    A    A    A    A    *    *    *
ApproachDel:       7.8             7.0             7.3          xxxxxx
Delay Adj:         1.00            1.00            1.00          xxxxx
ApprAdjDel:        7.8             7.0             7.3          xxxxxx
LOS by Appr:        A               A               A               *
AllWayAvgQ:   0.1  0.1  0.1  0.0  0.0  0.0  0.2  0.2  0.2  0.0  0.0  0.0
**********************************************************************
Note: Queue reported is the number of cars per lane.
**********************************************************************
```



```
                        Level Of Service Computation Report
               2000 HCM 4-Way Stop Method (Future Volume Alternative)
**********************************************************************
Intersection #18 Geyserville Avenue at Canyon Road
**********************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.169
Loss Time (sec):       0 (Y+R=4.0 sec) Average Delay (sec/veh):       7.7
Optimal Cycle:         0              Level Of Service:                 A
**********************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign       Stop Sign       Stop Sign
Rights:         Include         Include         Include         Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       0  1  0  0  0   0  0  0  1  0   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      93   28    0    0   18   27   17    0   84    0    0    0
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   93   28    0    0   18   27   17    0   84    0    0    0
Added Vol:      0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   93   28    0    0   18   27   17    0   84    0    0    0
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:   106   32    0    0   20   31   19    0   95    0    0    0
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  106   32    0    0   20   31   19    0   95    0    0    0
PCE Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:  106   32    0    0   20   31   19    0   95    0    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       0.77 0.23 0.00 0.00 0.40 0.60 0.17 0.00 0.83 0.00 0.00 0.00
Final Sat.:   625  188    0    0  357  536  152    0  753    0    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.17 xxxx xxxx 0.06 0.06 0.13 xxxx 0.13 xxxx xxxx xxxx
Crit Moves:       ****                ****  ****
Delay/Veh:    8.2  8.2  0.0  0.0  7.1  7.1  7.4  0.0  7.4  0.0  0.0  0.0
Delay Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:   8.2  8.2  0.0  0.0  7.1  7.1  7.4  0.0  7.4  0.0  0.0  0.0
LOS by Move:    A    A    *    *    A    A    A    *    A    *    *    *
ApproachDel:       8.2             7.1             7.4          xxxxxx
Delay Adj:         1.00            1.00            1.00          xxxxx
ApprAdjDel:        8.2             7.1             7.4          xxxxxx
LOS by Appr:        A               A               A               *
AllWayAvgQ:   0.2  0.2  0.2  0.1  0.1  0.1  0.1  0.1  0.1  0.0  0.0  0.0
**********************************************************************
Note: Queue reported is the number of cars per lane.
**********************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	32	0	0	31	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	32	0	0	31	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	63	63	32
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	949	832	1048
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	949	832	1048
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	51	0	0	51	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	51	0	0	51	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	102	102	51
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	901	792	1023
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	901	792	1023
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	32	0	0	31	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	32	0	0	31	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	51	0	0	51	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	51	0	0	51	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
********************************************************************************
Average Delay (sec/veh):      8.2       Worst Case Level Of Service: C[ 23.9]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    19    0   186     0  454     9   250   96     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    19    0   186     0  454     9   250   96     0
Added Vol:      0    0     0    66    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    85    0   186     0  454     9   250   96     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    97    0   211     0  516    10   284  109     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    97    0   211     0  516    10   284  109     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1198 1203   109  xxxx xxxx xxxxx   526 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   207  186   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   164  136   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.59 0.00  0.22  xxxx xxxx  xxxx  0.27 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.9  xxxx xxxx xxxxx   1.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.9 xxxxx xxxx xxxxx   9.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   164 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   3.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  54.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           23.9            xxxxxx           xxxxxx
ApproachLOS:        *               C                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
********************************************************************************
Average Delay (sec/veh):      5.8       Worst Case Level Of Service: B[ 13.8]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    15    1   280     0  414    15    79  130     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    15    1   280     0  414    15    79  130     0
Added Vol:      0    0     0    84    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    99    1   280     0  414    15    79  130     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   113    1   318     0  470    17    90  148     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   113    1   318     0  470    17    90  148     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   806  815   148  xxxx xxxx xxxxx   488 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   354  314   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   332  288   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.34 0.00  0.35  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.6  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  11.1 xxxxx xxxx xxxxx   8.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   331 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  21.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           13.8            xxxxxx           xxxxxx
ApproachLOS:        *               B                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: B[12.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 1 0 0			0 0 1 0 1		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	5	2	137	0	0	0	254	224	0	0	342	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	2	137	0	0	0	254	224	0	0	342	19
Added Vol:	0	0	0	0	0	0	0	66	0	0	0	84
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	5	2	137	0	0	0	254	290	0	0	342	103
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	6	2	156	0	0	0	289	330	0	0	389	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	6	2	156	0	0	0	289	330	0	0	389	117
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1354	1413	330	xxxx	xxxx	xxxxx	506	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	167	139	717	xxxx	xxxx	xxxxx	1069	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	132	102	717	xxxx	xxxx	xxxxx	1069	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.04	0.02	0.22	xxxx	xxxx	xxxx	0.27	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.8	xxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	11.4	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	122	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	36.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	E	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	12.6			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: B[12.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 1 0 0			0 0 1 0 1		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	9	0	196	0	0	0	250	169	0	0	357	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	0	196	0	0	0	250	169	0	0	357	18
Added Vol:	0	0	0	0	0	0	0	84	0	0	0	66
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	0	196	0	0	0	250	253	0	0	357	84
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	10	0	223	0	0	0	284	288	0	0	406	95
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	10	0	223	0	0	0	284	288	0	0	406	95
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1309	1357	288	xxxx	xxxx	xxxxx	501	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	177	150	756	xxxx	xxxx	xxxxx	1074	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	141	111	756	xxxx	xxxx	xxxxx	1074	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.07	0.00	0.29	xxxx	xxxx	xxxx	0.26	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.2	xxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	11.7	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	141	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	32.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	D	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	12.6			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.217
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.3
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	55	83	78	91	0	0	0	0	90	0	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	55	83	78	91	0	0	0	0	90	0	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	55	83	78	91	0	0	0	0	90	0	63
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	339	515	362	420	0	0	0	0	458	0	319
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.16	0.16	0.22	0.22	xxxx	xxxx	xxxx	xxxx	0.20	xxxx	0.20
Crit Moves:		****		****								****
Delay/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	7.8	7.8	8.7	8.7	0.0	0.0	0.0	0.0	8.4	0.0	8.4
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	7.8			8.7			xxxxxx			8.4		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	7.8			8.7			xxxxxx			8.4		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.2	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.317
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	88	86	63	76	0	0	0	0	127	0	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	88	86	63	76	0	0	0	0	127	0	122
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	88	86	63	76	0	0	0	0	127	0	122
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	400	394	327	399	0	0	0	0	401	0	384
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.19	0.19	xxxx	xxxx	xxxx	xxxx	0.32	xxxx	0.32
Crit Moves:		****			****							
Delay/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	8.5			8.8			xxxxxx			9.3		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	8.5			8.8			xxxxxx			9.3		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.4	0.4	0.4

Note: Queue reported is the number of cars per lane.

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***************************************************************************
Intersection #32 River Road/Moody Lane/State Route 128
***************************************************************************
Cycle (sec):          100               Critical Vol./Cap.(X):        0.151
Loss Time (sec):        0 (Y+R=4.0 sec) Average Delay (sec/veh):        7.5
Optimal Cycle:          0               Level Of Service:                 A
2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Level Of Service Computation Report
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       0  0  1!  0  0  0  0  1!  0  0  0  0  1!  0  0  0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       64    2    2    5    3   33   15   25   82    7   21    3
Growth Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:    64    2    2    5    3   33   15   25   82    7   21    3
Added Vol:       0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:     0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:    64    2    2    5    3   33   15   25   82    7   21    3
User Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:     73    2    2    6    3   38   17   28   93    8   24    3
Reduct Vol:      0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:    73    2    2    6    3   38   17   28   93    8   24    3
PCE Adj:      1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:      1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:    73    2    2    6    3   38   17   28   93    8   24    3
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        0.94 0.03 0.03 0.12 0.07 0.81 0.12 0.20 0.68 0.22 0.68 0.10
Final Sat.:    733   23   23  109   65  717  113  188  616  184  552   79
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.10 0.10 0.10 0.05 0.05 0.05 0.15 0.15 0.15 0.04 0.04 0.04
Crit Moves:        ****                ****      ****                ****
Delay/Veh:     7.9  7.9  7.9  7.1  7.1  7.1  7.5  7.5  7.5  7.5  7.5  7.5
Delay Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:    7.9  7.9  7.9  7.1  7.1  7.1  7.5  7.5  7.5  7.5  7.5  7.5
LOS by Move:     A    A    A    A    A    A    A    A    A    A    A    A
ApproachDel:        7.9              7.1              7.5              7.5
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:         7.9              7.1              7.5              7.5
LOS by Appr:          A                A                A                A
AllWayAvgQ:    0.1  0.1  0.1  0.1  0.1  0.1  0.2  0.2  0.2  0.0  0.0  0.0
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #32 River Road/Moody Lane/State Route 128
***************************************************************************
Cycle (sec):          100               Critical Vol./Cap.(X):        0.258
Loss Time (sec):        0 (Y+R=4.0 sec) Average Delay (sec/veh):        8.4
Optimal Cycle:          0               Level Of Service:                 A
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       0  0  1!  0  0  0  0  0  1  0  1  0  1!  0  0  0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      165    5    4    0    2   33   27   19   89    3   40    2
Growth Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   165    5    4    0    2   33   27   19   89    3   40    2
Added Vol:       0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:     0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   165    5    4    0    2   33   27   19   89    3   40    2
User Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:    188    6    5    0    2   38   31   22  101    3   45    2
Reduct Vol:      0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   188    6    5    0    2   38   31   22  101    3   45    2
PCE Adj:      1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:      1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:   188    6    5    0    2   38   31   22  101    3   45    2
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        0.95 0.03 0.02 0.00 0.06 0.94 0.20 0.14 0.66 0.07 0.89 0.04
Final Sat.:    726   22   18    0   49  803  166  117  548   50  662   33
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.26 0.26 0.26 xxxx 0.05 0.05 0.18 0.18 0.18 0.07 0.07 0.07
Crit Moves:        ****                ****  ****                    ****
Delay/Veh:     9.1  9.1  9.1  0.0  7.2  7.2  8.0  8.0  8.0  7.9  7.9  7.9
Delay Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:    9.1  9.1  9.1  0.0  7.2  7.2  8.0  8.0  8.0  7.9  7.9  7.9
LOS by Move:     A    A    A    *    A    A    A    A    A    A    A    A
ApproachDel:        9.1              7.2              8.0              7.9
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:         9.1              7.2              8.0              7.9
LOS by Appr:          A                A                A                A
AllWayAvgQ:    0.3  0.3  0.3  0.0  0.0  0.0  0.2  0.2  0.2  0.1  0.1  0.1
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

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---------------------------------------------------------------------------------
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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*********************************************************************************
Average Delay (sec/veh):      2.9       Worst Case Level Of Service: B[ 11.6]
*********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    1  0  0  0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0    0    104    0    0      4  116    0      0  132   77
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0    0    104    0    0      4  116    0      0  132   77
Added Vol:       0    0    0      0    0    0      0    0    0      0    0    0
PasserByVol:     0    0    0      0    0    0      0    0    0      0    0    0
Initial Fut:     0    0    0    104    0    0      4  116    0      0  132   77
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0    0    118    0    0      5  132    0      0  150   88
Reduct Vol:      0    0    0      0    0    0      0    0    0      0    0    0
FinalVolume:     0    0    0    118    0    0      5  132    0      0  150   88
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   335 xxxx xxxxx   238 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   665 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   663 xxxx xxxxx  1341 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.18 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.6 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  11.6 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     B    *    *     A    *    *     *    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    *     *    *    *     A    *    *     *    *    *
ApproachDel:     xxxxxx            11.6            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```



```
---------------------------------------------------------------------------------
---------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*********************************************************************************
Average Delay (sec/veh):      2.0       Worst Case Level Of Service: B[ 13.1]
*********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0    0     82    0    5      5   92    0      0  250  158
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0    0     82    0    5      5   92    0      0  250  158
Added Vol:       0    0    0      0    0    0      0    0    0      0    0    0
PasserByVol:     0    0    0      0    0    0      0    0    0      0    0    0
Initial Fut:     0    0    0     82    0    5      5   92    0      0  250  158
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0    0     93    0    6      6  105    0      0  284  180
Reduct Vol:      0    0    0      0    0    0      0    0    0      0    0    0
FinalVolume:     0    0    0     93    0    6      6  105    0      0  284  180
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   490  490   374   464 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   541  482   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   539  479   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.17 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    *     *    *    *     A    *    *     *    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  545 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.7 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 13.1 xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    *     *    B    *     A    *    *     *    *    *
ApproachDel:     xxxxxx            13.1            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

Scenario Report

Scenario:	AM Peak Hour 678
Command:	AM Peak Hour 6
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 6
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 6

Scenario Report

Scenario:	PM Peak Hour 678
Command:	PM Peak Hour 6
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 6
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 6

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Trip Generation Report

Forecast for AM Peak Hour 2

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2	Route 2	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
2	Route 2	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
Zone 2 Subtotal						84	66	150	100.0
3	Route 3	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
3	Route 3	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
4	Route 4	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
4	Route 4	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
5	Route 5	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
5	Route 5	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
678	Route 6,7,8	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
678	Route 6,7,8	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 6

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
678	Route 6,7,8	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 678 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Turning Movement Report
AM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	94	0	10	0	23	9	139	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	14	0	184	0	0	0	8	116	0	0	144	72	538
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	135	0	0	0	0	81	105	0	185	0	0	0	506
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	84	0	0	0	0	0	0	66	0	0	150
Total	0	0	84	0	0	0	0	0	0	66	0	0	150
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Turning Movement Report
PM Peak Hour 6

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	118	153	0	0	0	0	0	271
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	130	0	0	0	2	23	0	0	117	1	279
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	20	0	8	0	23	6	120	23	0	200
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	185	168	0	0	0	0	0	353
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	8	66	142	0	0	0	7	26	0	0	182	3	434
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	4	84	4	0	27	2	170	37	0	328
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	36	0	4	0	58	53	100	62	0	313
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	28	3	124	0	0	0	24	75	0	0	128	80	462
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	93	28	0	0	18	111	83	0	84	0	0	0	417
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	66	0	0	84	0	0	0	0	0	0	0	150
Total	0	111	0	0	129	0	0	0	0	0	0	0	240
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	66	0	0	84	0	0	0	0	0	0	0	150
Total	0	111	0	0	129	0	0	0	0	0	0	0	240

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	84	0	0	66	0	150
Total	0	0	0	0	0	0	0	84	0	0	66	0	150
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	66	0	0	0	0	0	0	84	0	0	150
Total	0	45	66	0	45	0	0	0	0	84	0	0	240
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Link Volume Report
AM Peak Hour 2

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	148	148	104	0	104	32	35	67	164	117	281	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	198	0	198	0	80	80	124	158	282	216	300	516	1076
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	135	185	320	81	105	186	290	216	506	0	0	0	1012
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	0	0	0	66	84	150	300
Total	84	66	150	0	0	0	0	0	0	66	84	150	300
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Link Volume Report
PM Peak Hour 6

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	118	153	271	153	118	271	0	0	0	542
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	136	0	136	0	3	3	25	123	148	118	153	271	558
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	126	126	28	0	28	29	31	60	143	43	186	400
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	185	168	353	168	185	353	0	0	0	706
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	216	0	216	0	76	76	33	190	223	185	168	353	868
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	256	256	92	0	92	29	41	70	207	31	238	656
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	153	153	40	0	40	111	66	177	162	94	256	626
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	155	0	155	0	107	107	99	156	255	208	199	407	924
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	121	102	223	129	111	240	167	204	371	0	0	0	834
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	66	84	150	84	66	150	0	0	0	0	0	0	300
Total	111	129	240	129	111	240	0	0	0	0	0	0	480
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	66	84	150	84	66	150	0	0	0	0	0	0	300
Total	111	129	240	129	111	240	0	0	0	0	0	0	480

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	84	66	150	66	84	150	300
Total	0	0	0	0	0	0	84	66	150	66	84	150	300
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	66	84	150	0	0	0	0	0	0	84	66	150	300
Total	111	129	240	45	45	90	0	0	0	84	66	150	480
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	10.5	0.000	B	12.2	0.000	+ 1.735 D/V
# 5 Highway 101 nb at Lytton Sprin	A	9.7	0.000	B	10.4	0.000	+ 0.633 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.7	0.000	B	12.9	0.000	+ 2.200 D/V
# 12 Geyserville Avenue at Banti La	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.1	0.000	A	9.1	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.7	0.000	A	9.7	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.5	0.000	A	9.5	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.4	0.150	A	7.4	0.150	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.8	0.000	C	23.9	0.000	+12.116 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.6	0.000	B	12.6	0.000	+ 1.012 D/V
# 31 Geyserville Avenue at Highway	A	8.3	0.217	A	8.3	0.217	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.5	0.151	A	7.5	0.151	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	11.6	0.000	B	11.6	0.000	+ 0.000 D/V

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	12.7	0.000	C	16.6	0.000	+ 3.865 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.3	0.000	B	12.7	0.000	+ 2.360 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.8	0.000	B	10.8	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.2	0.000	B	10.7	0.000	+ 1.544 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.4	0.000	C	15.5	0.000	+ 5.138 D/V
# 15 Geyserville Avenue at Hamilton	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.8	0.000	B	11.5	0.000	+ 1.703 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.6	0.000	B	10.1	0.000	+ 0.415 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.169	A	8.3	0.237	+ 0.068 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	9.7	0.000	+ 9.720 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.4	0.000	B	13.8	0.000	+ 2.422 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.4	0.000	B	12.6	0.000	+ 1.231 D/V
# 31 Geyserville Avenue at Highway	A	8.9	0.317	A	8.9	0.317	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	8.4	0.258	A	8.4	0.258	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

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Signal Warrant Summary Report

Intersection	Base Met	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

[Del / Vol]

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0
ApproachDel:	xxxxxx			10.5			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	68	0	5	0	41	38	148	26	0
ApproachDel:	xxxxxx			12.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	68	0	5	0	43	38	148	26	0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                     Peak Hour Delay Signal Warrant Report
******************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
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Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:   14    0   100     0    0    0     8  116    0     0   78    72
ApproachDel:      9.7           xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                     Peak Hour Delay Signal Warrant Report
******************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:   40    0    95     0    0    0     0   90    0     0  140    98
ApproachDel:     10.3           xxxxxx           xxxxxx           xxxxxx
                                                 17
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	17 93 0	0 140 98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

```
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
Initial Vol:  135    0    0    0    0   15   21    0  185    0    0    0
ApproachDel:    xxxxxx          xxxxxx            10.7           xxxxxx
------------|---------------||---------------||---------------||---------------|
```

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

```
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
Initial Vol:  214    0    0    0    0   24   18    0  170    0    0    0
ApproachDel:    xxxxxx          xxxxxx            10.8           xxxxxx
------------|---------------||---------------||---------------||---------------|
```

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	0	0 1	1 0	0	0 0	0 0	0	0 0
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.0			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=153]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=271]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	0	0 1	1 0	0	0 0	0 0	0	0 0
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.1			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=168]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=353]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:    6    0   130     0    0    0     2   23    0     0  117    1
ApproachDel:      9.1          xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


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--------------------------------------------------------------------------------
                     Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:    8    0   142     0    0    0     7   20    0     0  182    3
ApproachDel:      9.2          xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 20 0	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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---------------------------------------------------------------------------
                 Peak Hour Delay Signal Warrant Report
***************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
***************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
Initial Vol:    0     0     0   20     0     8     0    23     6   120    23     0
ApproachDel:    xxxxxx           10.3           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
    FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
    FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
    FAIL - Total volume less than 650 for intersection
           with less than four approaches.
---------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



```
---------------------------------------------------------------------------
---------------------------------------------------------------------------
                 Peak Hour Delay Signal Warrant Report
***************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
***************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
Initial Vol:    0     0     0    4     0     4     0    21     2   170    37     0
ApproachDel:    xxxxxx           10.4           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
    FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
    FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
    FAIL - Total volume less than 650 for intersection
           with less than four approaches.
---------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	20	0	8	0	23	6	120	23	0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	4	0	4	0	27	2	170	37	0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Initial Vol:	0	153	0	0	118	0	0	0	0	10	0	10
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			9.8		

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=20]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=291]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Initial Vol:	0	168	0	0	185	0	0	0	0	10	0	10
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.2		

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=20]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=373]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	75	0	6	0	22	31	17	48	0
ApproachDel:	xxxxxx			9.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	36	0	4	0	58	53	16	62	0
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33
ApproachDel:	9.5			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	28	3	58	0	0	0	24	75	0	0	44	80
ApproachDel:	9.6			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	0 75 24	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	55	6	0	0	11	16	22	0	105	0	0	0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	93	28	0	0	18	27	17	0	84	0	0	0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	1 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	1 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Initial Vol:	0	0	0	19	0	186	0	454	9	250	96	0
ApproachDel:	xxxxxx			11.8			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Initial Vol:	0	0	0	15	1	280	0	414	15	79	130	0
ApproachDel:	xxxxxx			11.4			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
Initial Vol:    5    2   137    0    0    0   254  224    0     0  342    19
ApproachDel:     11.6           xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
   FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
   FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



```
                 Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
Initial Vol:    9    0   196    0    0    0   250 1160    0     0  357    18
ApproachDel:     11.4           xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
   SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 1 0 0			0 0 1 0 1		
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 1 0 0			0 0 1 0 1		
Initial Vol:	9	0	196	0	0	0	250	1160	0	0	357	18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	64 2 2	5 3 33	15 25 82	7 21 3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	165 5 4	0 2 33	27 119 89	3 40 2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	11.6	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	0 92 0	0 250 158
ApproachDel:	xxxxxx	13.1	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      7.7       Worst Case Level Of Service: B[ 12.2]
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        0    0     0    94    0    10     0   23     9    73   25     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    94    0    10     0   23     9    73   25     0
Added Vol:       0    0     0     0    0     0     0    0     0    66    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    94    0    10     0   23     9   139   25     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   107    0    11     0   26    10   158   28     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   107    0    11     0   26    10   158   28     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   376  381    28  xxxx xxxx xxxxx    36 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   630  555  1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   577  495  1052  xxxx xxxx xxxxx  1587 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.19 0.00  0.01  xxxx xxxx  xxxx  0.10 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:     *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   577 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.7 xxxx xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  12.6 xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:      *    *     *     B    *     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            12.2            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      9.1       Worst Case Level Of Service: C[ 16.6]
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0    68    0     5     0   43    38   148   26     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    68    0     5     0   43    38   148   26     0
Added Vol:       0    0     0     0   84     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    68   84     5     0   43    38   148   26     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0    77   95     6     0   49    43   168   30     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0    77   95     6     0   49    43   168   30     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   436  458    30  xxxx xxxx xxxxx    92 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   581  502  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   527  441  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 0.22  0.01  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.4 xxxxx xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:     *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   475 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.6 xxxx xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  16.8 xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx
Shared LOS:      *    *     *     C    *     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            16.6            xxxxxx           xxxxxx
ApproachLOS:        *                C                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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-------------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      3.9      Worst Case Level Of Service: B[ 10.4]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       14    0  100     0    0    0     8  116    0     0   78   72
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    14    0  100     0    0    0     8  116    0     0   78   72
Added Vol:       0    0   84     0    0    0     0    0    0     0   66    0
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    14    0  184     0    0    0     8  116    0     0  144   72
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     16    0  209     0    0    0     9  132    0     0  164   82
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    16    0  209     0    0    0     9  132    0     0  164   82
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  355  395   132  xxxx xxxx xxxxx   245 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  647  545   923  xxxx xxxx xxxxx  1332 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    644  541   923  xxxx xxxx xxxxx  1332 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.00  0.23  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  896 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.0 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.4 xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      10.4           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*******************************************************************************
Average Delay (sec/veh):      4.9      Worst Case Level Of Service: B[ 12.7]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       40    0   95     0    0    0    17   93    0     0  140   98
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    40    0   95     0    0    0    17   93    0     0  140   98
Added Vol:       0   66    0     0    0    0     0    0    0     0    0    0
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    40   66   95     0    0    0    17   93    0     0  140   98
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     45   75  108     0    0    0    19  106    0     0  159  111
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    45   75  108     0    0    0    19  106    0     0  159  111
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  359  415   106  xxxx xxxx xxxxx   270 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  644  531   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    636  523   954  xxxx xxxx xxxxx  1305 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.14  0.11  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  697 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.7 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      12.7           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      9.4       Worst Case Level Of Service: B[ 12.9]
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135    0     0     0    0    15    21    0   185     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135    0     0     0    0    15    21    0   185     0    0     0
Added Vol:      0    0     0     0    0    66    84    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  135    0     0     0    0    81   105    0   185     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   153    0     0     0    0    92   119    0   210     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  153    0     0     0    0    92   119    0   210     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   92 xxxx xxxxx  xxxx xxxx xxxxx   307  307     0  xxxx xxxx xxxxx
Potent Cap.: 1515 xxxx xxxxx  xxxx xxxx xxxxx   689  610   900  xxxx xxxx xxxxx
Move Cap.:   1515 xxxx xxxxx  xxxx xxxx xxxxx   636  549   900  xxxx xxxx xxxxx
Volume/Cap:  0.10 xxxx  xxxx  xxxx xxxx  xxxx  0.19 0.00  0.23  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  782 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  2.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            12.9            xxxxxx
ApproachLOS:        *                *                B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      8.6       Worst Case Level Of Service: B[ 10.8]
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     214    0     0     0    0    24    18    0   170     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  214    0     0     0    0    24    18    0   170     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  214    0     0     0    0    24    18    0   170     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   243    0     0     0    0    27    20    0   193     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  243    0     0     0    0    27    20    0   193     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   27 xxxx xxxxx  xxxx xxxx xxxxx   486  486     0  xxxx xxxx xxxxx
Potent Cap.: 1600 xxxx xxxxx  xxxx xxxx xxxxx   544  484   900  xxxx xxxx xxxxx
Move Cap.:   1600 xxxx xxxxx  xxxx xxxx xxxxx   480  411   900  xxxx xxxx xxxxx
Volume/Cap:  0.15 xxxx  xxxx  xxxx xxxx  xxxx  0.04 0.00  0.21  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.5 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  831 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            10.8            xxxxxx
ApproachLOS:        *                *                B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Geyserville Avenue at Banti Lane

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: A[10.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 1	1 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	118	153	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	118	153	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	118	153	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	0	0	134	174	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	134	174	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.19	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.0			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Geyserville Avenue at Banti Lane

Average Delay (sec/veh): 4.8 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 1	1 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	185	168	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	185	168	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	185	168	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	0	0	210	191	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	210	191	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.21	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.1			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: A[9.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	6	0	130	0	0	0	2	23	0	0	117	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	0	130	0	0	0	2	23	0	0	117	1
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	0	130	0	0	0	2	23	0	0	117	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	7	0	148	0	0	0	2	26	0	0	133	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	0	148	0	0	0	2	26	0	0	133	1
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	164	165	26	xxxx	xxxx	xxxxx	134	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	831	731	1055	xxxx	xxxx	xxxxx	1463	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	830	730	1055	xxxx	xxxx	xxxxx	1463	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.14	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	1043	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	9.1	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	A	*	*	*	*	A	*	*	*	*	*
ApproachDel:		9.1			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		A			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Average Delay (sec/veh): 5.5 Worst Case Level Of Service: B[10.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module: >> Count Date: 17 May 2007 <<												
Base Vol:	8	0	142	0	0	0	7	26	0	0	182	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	0	142	0	0	0	7	26	0	0	182	3
Added Vol:	0	66	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	66	142	0	0	0	7	26	0	0	182	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	9	75	161	0	0	0	8	30	0	0	207	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	75	161	0	0	0	8	30	0	0	207	3
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	254	256	30	xxxx	xxxx	xxxxx	210	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	739	652	1051	xxxx	xxxx	xxxxx	1372	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	736	648	1051	xxxx	xxxx	xxxxx	1372	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.01	0.12	0.15	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	871	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.2	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.7	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	*	*	*
ApproachDel:		10.7			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

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----------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
****************************************************************************
Average Delay (sec/veh):     5.9      Worst Case Level Of Service: B[ 10.3]
****************************************************************************
Approach:     North Bound    South Bound     East Bound      West Bound
Movement:    L  -  T  -  R  L  -  T  -  R  L  -  T  -  R  L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign      Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include        Include         Include         Include
Lanes:       0  0  0  0  0  0  0  1! 0  0  0  0  0  1  0  0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:      0    0    0   20    0    8    0   23    6  120   23    0
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   0    0    0   20    0    8    0   23    6  120   23    0
Added Vol:     0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:   0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   0    0    0   20    0    8    0   23    6  120   23    0
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:    0    0    0   23    0    9    0   26    7  136   26    0
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
FinalVolume:   0    0    0   23    0    9    0   26    7  136   26    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx  4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx  2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   328  332   26  xxxx xxxx xxxxx   33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   670  591 1055  xxxx xxxx xxxxx 1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   623  536 1055  xxxx xxxx xxxxx 1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.04 0.00 0.01  xxxx xxxx  xxxx 0.09 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  7.5 xxxx xxxxx
LOS by Move:   *    *    *     *    *    *     *    *    *     A    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  705 xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx  0.3 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxx xxxxx  7.5 xxxx xxxxx
Shared LOS:    *    *    *     *    B    *     *    *    *     A    *    *
ApproachDel:    xxxxxx           10.3           xxxxxx          xxxxxx
ApproachLOS:       *              B               *               *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
```



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----------------------------------------------------------------------------
----------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
****************************************************************************
Average Delay (sec/veh):     8.3      Worst Case Level Of Service: C[ 15.5]
****************************************************************************
Approach:     North Bound    South Bound     East Bound      West Bound
Movement:    L  -  T  -  R  L  -  T  -  R  L  -  T  -  R  L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign      Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include        Include         Include         Include
Lanes:       0  0  0  0  0  0  0  1! 0  0  0  0  0  1  0  0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      0    0    0    4    0    4    0   27    2  170   37    0
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   0    0    0    4    0    4    0   27    2  170   37    0
Added Vol:     0    0    0    0   84    0    0    0    0    0    0    0
PasserByVol:   0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   0    0    0    4   84    4    0   27    2  170   37    0
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:    0    0    0    5   95    5    0   31    2  193   42    0
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
FinalVolume:   0    0    0    5   95    5    0   31    2  193   42    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx  4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx  2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   460  461   42  xxxx xxxx xxxxx   33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   563  500 1034  xxxx xxxx xxxxx 1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   504  432 1034  xxxx xxxx xxxxx 1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.22 0.00  xxxx xxxx  xxxx 0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  7.6 xxxx xxxxx
LOS by Move:   *    *    *     *    *    *     *    *    *     A    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  446 xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.9 xxxxx xxxxx xxxx xxxxx  0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 15.5 xxxxx xxxxx xxxx xxxxx  7.6 xxxx xxxxx
Shared LOS:    *    *    *     *    C    *     *    *    *     A    *    *
ApproachDel:    xxxxxx           15.5           xxxxxx          xxxxxx
ApproachLOS:       *              C               *               *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
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                        Level Of Service Computation Report
              2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*********************************************************************************
Average Delay (sec/veh):      0.7      Worst Case Level Of Service: A[  9.8]
*********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0  153    0      0  118    0      0    0    0     10    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0  153    0      0  118    0      0    0    0     10    0    10
Added Vol:     0    0    0      0    0    0      0    0    0      0    0     0
PasserByVol:   0    0    0      0    0    0      0    0    0      0    0     0
Initial Fut:   0  153    0      0  118    0      0    0    0     10    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0  174    0      0  134    0      0    0    0     11    0    11
Reduct Vol:    0    0    0      0    0    0      0    0    0      0    0     0
FinalVolume:   0  174    0      0  134    0      0    0    0     11    0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   308  308   174
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   688  609   875
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   688  609   875
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  770 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  9.8 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    A     *
ApproachDel:   xxxxxx           xxxxxx           xxxxxx              9.8
ApproachLOS:     *                *                *                  A
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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---------------------------------------------------------------------------------
---------------------------------------------------------------------------------
                        Level Of Service Computation Report
              2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*********************************************************************************
Average Delay (sec/veh):      0.5      Worst Case Level Of Service: B[ 10.2]
*********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0  168    0      0  185    0      0    0    0     10    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0  168    0      0  185    0      0    0    0     10    0    10
Added Vol:     0    0    0      0    0    0      0    0    0      0    0     0
PasserByVol:   0    0    0      0    0    0      0    0    0      0    0     0
Initial Fut:   0  168    0      0  185    0      0    0    0     10    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0  191    0      0  210    0      0    0    0     11    0    11
Reduct Vol:    0    0    0      0    0    0      0    0    0      0    0     0
FinalVolume:   0  191    0      0  210    0      0    0    0     11    0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   401  401   191
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  712 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.2 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    B     *
ApproachDel:   xxxxxx           xxxxxx           xxxxxx             10.2
ApproachLOS:     *                *                *                  B
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
******************************************************************************
Average Delay (sec/veh):      4.6      Worst Case Level Of Service: A[  9.7]
******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    75    0     6     0   22    31    17   48     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    75    0     6     0   22    31    17   48     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    75    0     6     0   22    31    17   48     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    85    0     7     0   25    35    19   55     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    85    0     7     0   25    35    19   55     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   136  153    55  xxxx xxxx xxxxx    60 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   862  742  1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   854  733  1018  xxxx xxxx xxxxx  1556 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.10 0.00  0.01  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  865 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.7 xxxxx xxxxx xxxx xxxxx   7.3 xxxx xxxxx
Shared LOS:     *    *     *     *    A     *     *    *     *     A    *     *
ApproachDel:     xxxxxx             9.7            xxxxxx           xxxxxx
ApproachLOS:        *                A                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```



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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
******************************************************************************
Average Delay (sec/veh):      3.9      Worst Case Level Of Service: B[ 11.5]
******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    36    0     4     0   58    53    16   62     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    36    0     4     0   58    53    16   62     0
Added Vol:      0    0     0     0    0     0     0    0     0    84    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    36    0     4     0   58    53   100   62     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    41    0     5     0   66    60   114   70     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    41    0     5     0   66    60   114   70     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   394  424    70  xxxx xxxx xxxxx   126 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   615  525   998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   576  482   998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.07 0.00  0.00  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  601 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 11.5 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            11.5            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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-----------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*****************************************************************************
Average Delay (sec/veh):      3.0      Worst Case Level Of Service: A[  9.5]
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29    0    40     0    0     0    13   93     0     0   42    33
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    33    0    45     0    0     0    15  106     0     0   48    38
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   33    0    45     0    0     0    15  106     0     0   48    38
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  202  220   106  xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  791  682   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    785  675   954  xxxx xxxx xxxxx  1524 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.05  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  875 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.5 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.5           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
*****************************************************************************
Average Delay (sec/veh):      3.8      Worst Case Level Of Service: B[ 10.1]
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:      0    0    66     0    0     0     0    0     0     0   84     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   28    3   124     0    0     0    24   75     0     0  128    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    32    3   141     0    0     0    27   85     0     0  145    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   32    3   141     0    0     0    27   85     0     0  145    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  331  376    85  xxxx xxxx xxxxx   236 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  668  558   979  xxxx xxxx xxxxx  1343 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    658  547   979  xxxx xxxx xxxxx  1343 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.05 0.01  0.14  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  887 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.7 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.1 xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:        10.1           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          B               *                *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
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                  Level Of Service Computation Report
        2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #18 Geyserville Avenue at Canyon Road
***************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.150
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):        7.4
Optimal Cycle:        0              Level Of Service:                 A
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:    0    0     0     0    0     0     0    0     0     0    0     0
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:     55    6     0     0   11    16    22    0   105     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  55    6     0     0   11    16    22    0   105     0    0     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  55    6     0     0   11    16    22    0   105     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   63    7     0     0   13    18    25    0   119     0    0     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  63    7     0     0   13    18    25    0   119     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  63    7     0     0   13    18    25    0   119     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.90 0.10  0.00  0.00 0.41  0.59  0.17 xxxx  0.83  0.00 0.00  0.00
Final Sat.:  720   79     0     0  364   529   167    0   798     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.09  xxxx  xxxx 0.03  0.03  0.15 0.00  0.15  xxxx xxxx  xxxx
Crit Moves:       ****             ****        ****
Delay/Veh:    7.8  7.8   0.0   0.0  7.0   7.0   7.3  7.3   7.3   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   7.8  7.8   0.0   0.0  7.0   7.0   7.3  7.3   7.3   0.0  0.0   0.0
LOS by Move:    A    A     *     *    A     A     A    A     A     *    *     *
ApproachDel:       7.8              7.0              7.3            xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        7.8              7.0              7.3            xxxxxx
LOS by Appr:        A                A                A                *
AllWayAvgQ:   0.1  0.1   0.1   0.0  0.0   0.0   0.2  0.2   0.2   0.0  0.0   0.0
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
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                  Level Of Service Computation Report
        2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #18 Geyserville Avenue at Canyon Road
***************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.237
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):        8.3
Optimal Cycle:        0              Level Of Service:                 A
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:    0    0     0     0    0     0     0    0     0     0    0     0
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:     93   28     0     0   18    27    17    0    84     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  93   28     0     0   18    27    17    0    84     0    0     0
Added Vol:     0    0     0     0    0    84    17    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  93   28     0     0   18   111    66    0    84     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:  106   32     0     0   20   126    94    0    95     0    0     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 106   32     0     0   20   126    94    0    95     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume: 106   32     0     0   20   126    94    0    95     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.77 0.23  0.00  0.00 0.14  0.86  0.50 0.00  0.50  0.00 0.00  0.00
Final Sat.:  579  174     0     0  122   750   399    0   403     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.18  xxxx  xxxx 0.17  0.17  0.24 xxxx  0.24  xxxx xxxx  xxxx
Crit Moves:       ****                   ****  ****
Delay/Veh:    8.6  8.6   0.0   0.0  7.7   7.7   8.5  0.0   8.5   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   8.6  8.6   0.0   0.0  7.7   7.7   8.5  0.0   8.5   0.0  0.0   0.0
LOS by Move:    A    A     *     *    A     A     A    *     A     *    *     *
ApproachDel:       8.6              7.7              8.5            xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        8.6              7.7              8.5            xxxxxx
LOS by Appr:        A                A                A                *
AllWayAvgQ:   0.2  0.2   0.2   0.2  0.2   0.2   0.3  0.3   0.3   0.0  0.0   0.0
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
*********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
*********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28     0     0   27     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28     0     0   27     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   28     0     0   27     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   32     0     0   31     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   32     0     0   31     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx    63   63    32
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   949  832  1048
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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---------------------------------------------------------------------------------
---------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
*********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
*********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45     0     0   45     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45     0     0   45     0     0    0     0     0    0     0
Added Vol:      0   66     0     0   84     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  111     0     0  129     0     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  126     0     0  147     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  126     0     0  147     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   273  273   126
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   721  638   930
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   721  638   930
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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                 Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #21 Geyserville Avenue at Private Road
***************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   28    0     0   27    0     0    0    0     0    0    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0   28    0     0   27    0     0    0    0     0    0    0
Added Vol:     0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:   0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:   0   28    0     0   27    0     0    0    0     0    0    0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0   32    0     0   31    0     0    0    0     0    0    0
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:   0   32    0     0   31    0     0    0    0     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *    *     *    *    *     *    *    *     *    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:   xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:      *                *                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
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                 Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #21 Geyserville Avenue at Private Road
***************************************************************************
Average Delay (sec/veh):      3.4      Worst Case Level Of Service: A[  9.7]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  1  0   0  0  1  0  0   0  0  0  0  0   1  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   45    0     0   45    0     0    0    0     0    0    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0   45    0     0   45    0     0    0    0     0    0    0
Added Vol:     0    0   66     0    0    0     0    0    0    84    0    0
PasserByVol:   0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:   0   45   66     0   45    0     0    0    0    84    0    0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0   51   75     0   51    0     0    0    0    95    0    0
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:   0   51   75     0   51    0     0    0    0    95    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   140 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   858 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   858 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.7 xxxx xxxxx
LOS by Move:   *    *    *     *    *    *     *    *    *     A    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:   xxxxxx           xxxxxx           xxxxxx             9.7
ApproachLOS:      *                *                *                A
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

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-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):      8.2      Worst Case Level Of Service: C[ 23.9]
*******************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include         Include         Include         Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    19    0   186     0  454     9   250   96     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    19    0   186     0  454     9   250   96     0
Added Vol:      0    0     0    66    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    85    0   186     0  454     9   250   96     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    97    0   211     0  516    10   284  109     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    97    0   211     0  516    10   284  109     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1198 1203   109  xxxx xxxx xxxxx   526 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   207  186   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   164  136   950  xxxx xxxx xxxxx  1051 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.59 0.00  0.22  xxxx xxxx  xxxx  0.27 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.9  xxxx xxxx xxxxx   1.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   9.9 xxxxx xxxx xxxxx   9.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   164 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   3.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  54.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            23.9            xxxxxx          xxxxxx
ApproachLOS:        *                C                *               *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):      5.8      Worst Case Level Of Service: B[ 13.8]
*******************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include         Include         Include         Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    15    1   280     0  414    15    79  130     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    15    1   280     0  414    15    79  130     0
Added Vol:      0    0     0    84    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    99    1   280     0  414    15    79  130     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   113    1   318     0  470    17    90  148     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   113    1   318     0  470    17    90  148     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   806  815   148  xxxx xxxx xxxxx   488 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   354  314   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   332  288   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.34 0.00  0.35  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.6  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  11.1 xxxxx xxxx xxxxx   8.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   331 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  21.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            13.8            xxxxxx          xxxxxx
ApproachLOS:        *                B                *               *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      3.8       Worst Case Level Of Service: B[ 12.6]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       5    2   137     0    0    0   254  224    0     0  342    19
Growth Adj:  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00  1.00
Initial Bse:    5    2   137     0    0    0   254  224    0     0  342    19
Added Vol:      0    0     0     0    0    0     0   66    0     0    0    84
PasserByVol:    0    0     0     0    0    0     0    0    0     0    0     0
Initial Fut:    5    2   137     0    0    0   254  290    0     0  342   103
User Adj:    1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88  0.88
PHF Volume:     6    2   156     0    0    0   289  330    0     0  389   117
Reduct Vol:     0    0     0     0    0    0     0    0    0     0    0     0
FinalVolume:    6    2   156     0    0    0   289  330    0     0  389   117
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1354 1413   330  xxxx xxxx xxxxx   506 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  167  139   717  xxxx xxxx xxxxx  1069 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    132  102   717  xxxx xxxx xxxxx  1069 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.02  0.22  xxxx xxxx  xxxx  0.27 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   0.8  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  11.4 xxxxx xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *    *     A    *    *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  122 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 36.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     E    *     *     *    *    *     *    *    *     *    *     *
ApproachDel:      12.6            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      4.3       Worst Case Level Of Service: B[ 12.6]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       9    0   196     0    0    0   250  169    0     0  357    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00  1.00
Initial Bse:    9    0   196     0    0    0   250  169    0     0  357    18
Added Vol:      0    0     0     0    0    0     0   84    0     0    0    66
PasserByVol:    0    0     0     0    0    0     0    0    0     0    0     0
Initial Fut:    9    0   196     0    0    0   250  253    0     0  357    84
User Adj:    1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88  0.88
PHF Volume:    10    0   223     0    0    0   284  288    0     0  406    95
Reduct Vol:     0    0     0     0    0    0     0    0    0     0    0     0
FinalVolume:   10    0   223     0    0    0   284  288    0     0  406    95
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1309 1357   288  xxxx xxxx xxxxx   501 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  177  150   756  xxxx xxxx xxxxx  1074 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    141  111   756  xxxx xxxx xxxxx  1074 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.00  0.29  xxxx xxxx  xxxx  0.26 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   1.2  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  11.7 xxxxx xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *    *     A    *    *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  141 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 32.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     D    *     *     *    *    *     *    *    *     *    *     *
ApproachDel:      12.6            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
                 Level Of Service Computation Report
       2000 HCM 4-Way Stop Method (Future Volume Alternative)
**********************************************************************
Intersection #31 Geyserville Avenue at Highway 128
**********************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):       0.217
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):      8.3
Optimal Cycle:        0              Level Of Service:                A
**********************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       0  0  0  1  0   0  1  0  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      0   48   73   69   80    0    0    0    0   79    0   55
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   0   48   73   69   80    0    0    0    0   79    0   55
Added Vol:     0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:   0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   0   48   73   69   80    0    0    0    0   79    0   55
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:    0   55   83   78   91    0    0    0    0   90    0   63
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   0   55   83   78   91    0    0    0    0   90    0   63
PCE Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:   0   55   83   78   91    0    0    0    0   90    0   63
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       0.00 0.40 0.60 0.46 0.54 0.00 0.00 0.00 0.00 0.59 0.00 0.41
Final Sat.:    0  339  515  362  420    0    0    0    0  458    0  319
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     xxxx 0.16 0.16 0.22 0.22 xxxx xxxx xxxx xxxx 0.20 xxxx 0.20
Crit Moves:       ****      ****                                    ****
Delay/Veh:    0.0  7.8  7.8  8.7  8.7  0.0  0.0  0.0  0.0  8.4  0.0  8.4
Delay Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:   0.0  7.8  7.8  8.7  8.7  0.0  0.0  0.0  0.0  8.4  0.0  8.4
LOS by Move:    *    A    A    A    A    *    *    *    *    A    *    A
ApproachDel:        7.8              8.7            xxxxxx            8.4
Delay Adj:         1.00             1.00             xxxxx           1.00
ApprAdjDel:         7.8              8.7            xxxxxx            8.4
LOS by Appr:          A                A                 *              A
AllWayAvgQ:   0.2  0.2  0.2  0.3  0.3  0.3  0.0  0.0  0.0  0.2  0.2  0.2
**********************************************************************
Note: Queue reported is the number of cars per lane.
**********************************************************************
```



```
                 Level Of Service Computation Report
       2000 HCM 4-Way Stop Method (Future Volume Alternative)
**********************************************************************
Intersection #31 Geyserville Avenue at Highway 128
**********************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):       0.317
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):      8.9
Optimal Cycle:        0              Level Of Service:                A
**********************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       0  0  0  1  0   0  1  0  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      0   77   76   55   67    0    0    0    0  112    0  107
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   0   77   76   55   67    0    0    0    0  112    0  107
Added Vol:     0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:   0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   0   77   76   55   67    0    0    0    0  112    0  107
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume:    0   88   86   63   76    0    0    0    0  127    0  122
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   0   88   86   63   76    0    0    0    0  127    0  122
PCE Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:   0   88   86   63   76    0    0    0    0  127    0  122
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       0.00 0.50 0.50 0.45 0.55 0.00 0.00 0.00 0.00 0.51 0.00 0.49
Final Sat.:    0  400  394  327  399    0    0    0    0  401    0  384
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     xxxx 0.22 0.22 0.19 0.19 xxxx xxxx xxxx xxxx 0.32 xxxx 0.32
Crit Moves:       ****           ****
Delay/Veh:    0.0  8.5  8.5  8.8  8.8  0.0  0.0  0.0  0.0  9.3  0.0  9.3
Delay Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:   0.0  8.5  8.5  8.8  8.8  0.0  0.0  0.0  0.0  9.3  0.0  9.3
LOS by Move:    *    A    A    A    A    *    *    *    *    A    *    A
ApproachDel:        8.5              8.8            xxxxxx            9.3
Delay Adj:         1.00             1.00             xxxxx           1.00
ApprAdjDel:         8.5              8.8            xxxxxx            9.3
LOS by Appr:          A                A                 *              A
AllWayAvgQ:   0.3  0.3  0.3  0.2  0.2  0.2  0.0  0.0  0.0  0.4  0.4  0.4
**********************************************************************
Note: Queue reported is the number of cars per lane.
**********************************************************************
```

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.151
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.5
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	73	2	2	6	3	38	17	28	93	8	24	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	2	2	6	3	38	17	28	93	8	24	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	73	2	2	6	3	38	17	28	93	8	24	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	733	23	23	109	65	717	113	188	616	184	552	79
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.05	0.05	0.05	0.15	0.15	0.15	0.04	0.04	0.04
Crit Moves:		****				****		****			****	
Delay/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.9	7.9	7.9	7.1	7.1	7.1	7.5	7.5	7.5	7.5	7.5	7.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		7.9			7.1			7.5			7.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		7.9			7.1			7.5			7.5	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.258
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.4
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33	27	0	19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	0	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	27	0	19	89	3	40	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	188	6	5	0	2	38	31	0	22	101	3	45	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	6	5	0	2	38	31	0	22	101	3	45	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	6	5	0	2	38	31	0	22	101	3	45	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20	0.14	0.66	0.07	0.89	0.04
Final Sat.:	726	22	18	0	49	803	166	117	548	50	662	33
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.26	xxxx	0.05	0.05	0.18	0.18	0.18	0.07	0.07	0.07
Crit Moves:		****				****	****				****	
Delay/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	8.0	8.0	8.0	7.9	7.9	7.9
LOS by Move:	A	A	A	*	A	A	A	A	A	A	A	A
ApproachDel:		9.1			7.2			8.0			7.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.1			7.2			8.0			7.9	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.3	0.3	0.3	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #34 Lytton Station Road at Alexander Valley Road

Average Delay (sec/veh): 2.9 Worst Case Level Of Service: B[11.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	1 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	104	0	0	4	116	0	0	132	77
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	104	0	0	4	116	0	0	132	77
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	104	0	0	4	116	0	0	132	77
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	118	0	0	5	132	0	0	150	88
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	118	0	0	5	132	0	0	150	88
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	335	xxxx	xxxxx	238	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	665	xxxx	xxxxx	1341	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	663	xxxx	xxxxx	1341	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.18	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.6	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #34 Lytton Station Road at Alexander Valley Road

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: B[13.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 0	1!	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	82	0	5	5	92	0	0	250	158
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	82	0	5	5	92	0	0	250	158
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	82	0	5	5	92	0	0	250	158
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	93	0	6	6	105	0	0	284	180
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	93	0	6	6	105	0	0	284	180
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	490	490	374	464	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	541	482	677	1108	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	539	479	677	1108	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.17	0.00	0.01	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*		*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	545	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	13.1	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			13.1			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Scenario Report

Scenario:	AM Peak Hour 2
Command:	AM Peak Hour 2
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 2
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 2

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Scenario Report

Scenario:	PM Peak Hour 2
Command:	PM Peak Hour 2
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 2
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 2

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Generation Report

Forecast for AM Peak Hour 2

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2	Route 2	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
2	Route 2	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
	Zone 2 Subtotal					84	66	150	100.0
3	Route 3	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
3	Route 3	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
4	Route 4	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
4	Route 4	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
5	Route 5	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
5	Route 5	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
678	Route 6,7,8	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
678	Route 6,7,8	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
TOTAL						84	66	150	100.0

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Generation Report

Forecast for PM Peak Hour 2

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2	Route 2	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
2	Route 2	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
	Zone 2 Subtotal					66	84	150	100.0
3	Route 3	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
3	Route 3	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
4	Route 4	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
4	Route 4	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
5	Route 5	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
5	Route 5	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
678	Route 6,7,8	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
678	Route 6,7,8	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
TOTAL						66	84	150	100.0

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Turning Movement Report
AM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	94	0	10	0	23	9	139	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	14	0	184	0	0	0	8	116	0	0	144	72	538
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	135	0	0	0	0	81	105	0	185	0	0	0	506
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	118	153	0	0	0	0	0	271
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	130	0	0	0	2	23	0	0	117	1	279
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	20	0	8	0	23	6	120	23	0	200
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Turning Movement Report
PM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	68	0	5	0	43	38	232	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	40	0	161	0	0	0	17	93	0	0	224	98	633
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	214	0	0	0	0	108	84	0	170	0	0	0	576
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	185	168	0	0	0	0	0	353
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	0	142	0	0	0	7	26	0	0	182	3	368
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	4	0	27	2	170	37	0	244
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312

AM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
AM Peak Hour 2

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	148	148	104	0	104	32	35	67	164	117	281	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	198	0	198	0	80	80	124	158	282	216	300	516	1076
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	135	185	320	81	105	186	290	216	506	0	0	0	1012
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	118	153	271	153	118	271	0	0	0	542
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	136	0	136	0	3	3	25	123	148	118	153	271	558
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	126	126	28	0	28	29	31	60	143	43	186	400
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
PM Peak Hour 2

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81		112	174	111	285	656
Added	0	84	84	0	0	0	0	31	0	84	0	84	168
Total	0	270	270	73	0	73	81	0 31	112	258	111	369	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110		290	238	188	426	966
Added	66	0	66	0	0	0	0	180	84	84	66	150	300
Total	201	0	201	0	115	115	110	84 264	374	322	254	576	1266
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188		426	0	0	0	852
Added	0	0	0	84	66	150	66	238	150	0	0	0	300
Total	214	170	384	108	84	192	254	84 322	576	0	0	0	1152
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168		353	0	0	0	706
Added	0	0	0	0	0	0	0	185	0	0	0	0	0
Total	0	0	0	185	168	353	168	0 185	353	0	0	0	706
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33		223	185	168	353	736
Added	0	0	0	0	0	0	0	190	0	0	0	0	0
Total	150	0	150	0	10	10	33	0 190	223	185	168	353	736
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29		70	207	31	238	488
Added	0	0	0	0	0	0	0	41	0	0	0	0	0
Total	0	172	172	8	0	8	29	0 41	70	207	31	238	488
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0		0	20	0	20	746
Added	0	0	0	0	0	0	0		0	0	0	0	0
Total	168	195	363	185	178	363	0	0 0 0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111		177	78	94	172	458
Added	0	0	0	0	0	0	0	66	0	0	0	0	0
Total	0	69	69	40	0	40	111	0 66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99		171	124	133	257	624
Added	0	0	0	0	0	0	0	72	0	0	0	0	0
Total	89	0	89	0	107	107	99	0 72	171	124	133	257	624

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	11.6	0.000	B	14.9	0.000	+ 3.330 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.4	0.000	B	11.6	0.000	+ 1.163 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	11.7	0.000	C	16.8	0.000	+ 5.176 D/V
# 12 Geyserville Avenue at Banti La	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.4	0.000	A	9.4	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.3	0.000	B	11.3	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.200	A	7.7	0.200	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	C	15.9	0.000	F	120.6	0.000	+104.613 D/V
# 24 Highway 101 nb ramp at Healdsb	B	14.3	0.000	C	16.8	0.000	+ 2.473 D/V
# 31 Geyserville Avenue at Highway	A	9.1	0.296	A	9.1	0.296	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.9	0.204	A	7.9	0.204	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.5	0.000	B	13.5	0.000	+ 0.000 D/V

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	12.7	0.000	C	16.3	0.000	+ 3.608 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.3	0.000	B	10.9	0.000	+ 0.598 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	10.8	0.000	B	13.8	0.000	+ 2.991 D/V
# 12 Geyserville Avenue at Banti La	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.2	0.000	A	9.2	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	A	9.8	0.000	A	9.8	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	9.6	0.000	A	9.6	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.169	A	7.7	0.169	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	11.4	0.000	B	13.8	0.000	+ 2.422 D/V
# 24 Highway 101 nb ramp at Healdsb	B	11.4	0.000	B	12.6	0.000	+ 1.231 D/V
# 31 Geyserville Avenue at Highway	A	8.9	0.317	A	8.9	0.317	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	8.4	0.258	A	8.4	0.258	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
Signal Warrant Summary Report

Intersection	Base Met	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

[Del / Vol]

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	68	0	5	0	43	38	148	26	0
ApproachDel:	xxxxxx			12.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
-----------------------------------------------------------------------------
*****************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Peak Hour Volume Signal Warrant Report [Urban]
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Control:        Stop Sign        Stop Sign        Uncontrolled     Uncontrolled
Lanes:        0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    0  1  0  0  0
Initial Vol:     0    0    0    94    0   10     0   23    9     73   25    0
------------|---------------||---------------||---------------||---------------|
Dowling Associates, Inc.
Major Street Volume:             130
Minor Approach Volume:           104
Minor Approach Volume Threshold: 934
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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```
-----------------------------------------------------------------------------
                    Syar Mining Traffic Assessment
                  PM Peak Hour - 6-14-07 - No Project
                       Dowling Associates, Inc.
-----------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
*****************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound                       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R                     L  -  T  -  R
------------|---------------||---------------||East Bound--R---||---------------|
Control:        Stop Sign        Stop Sign                        Uncontrolled
Lanes:        0  0  0  0  0    0  1  0  0  1     Uncontrolled    0  1  0  0  0
Initial Vol:     0    0    0    68    0    5 0  0  0 41  0 38    148   26    0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:             255         0
Minor Approach Volume:           73
Minor Approach Volume Threshold: 722
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72
ApproachDel:	10.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	17 93 0	0 140 98
ApproachDel:	10.3	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	14	0	100	0	0	0	8	116	0	0	78	72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	40	0	95	0	0	0	17	90	0	0	140	98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	135 0 0	0 0 15	21 0 185	0 0 0
ApproachDel:	xxxxxx	xxxxxx	11.7	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	214 0 0	0 0 24	18 0 170	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.8	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

```
-------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L - T - R        L - T - R        L - T - R        L - T - R
-------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled     Stop Sign        Stop Sign
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
Initial Vol:    0    0    0      0    0  118    153    0    0      0    0    0
ApproachDel:     xxxxxx            xxxxxx            10.3            xxxxxx
-------------|---------------||---------------||---------------||---------------|
```

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=153]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=271]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

```
-------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L - T - R        L - T - R        L - T - R        L - T - R
-------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled     Stop Sign        Stop Sign
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
Initial Vol:    0    0    0      0    0  185    168    0    0      0    0    0
ApproachDel:     xxxxxx            xxxxxx            10.1            xxxxxx
-------------|---------------||---------------||---------------||---------------|
```

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=168]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=353]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1
ApproachDel:	9.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3
ApproachDel:	9.2	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
[illegible]
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0
ApproachDel:	xxxxxx	11.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 27 2	170 37 0
ApproachDel:	xxxxxx	10.4	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0 0	0	0 0	1! 0	0	0 0	0 1	0	0 1	0 0	0
Initial Vol:	0	0	0	20	0	8	0	23	6	120	23	0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0 0	0	0 0	1! 0	0				0 1	0 0	0
Initial Vol:	0	0	0	4	0	4	0 0 0 21 0 2			170	37	0
							0					

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.4

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.2

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Dowling Associates, Inc.

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0
ApproachDel:	xxxxxx	10.2	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0
ApproachDel:	xxxxxx	9.8	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33
ApproachDel:	10.0			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	28	3	58	0	0	0	24	76	0	0	44	80
ApproachDel:	9.6			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	28	3	58	0	0	0	24	78	0	0	44	80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	55 6 0	0 11 16	22 0 105	0 0 0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	93 28 0	0 18 27	17 0 84	0 0 0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Dowling Associates, Inc.

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
Peak Hour Volume Signal Warrant Report [Urban]
Dowling Associates, Inc.

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0
ApproachDel:	xxxxxx	15.9	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 1	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0
ApproachDel:	xxxxxx	11.4	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
No Project
Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Dowling Associates, Inc.

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1		1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 0 0411 0 15	79 130 0

Major Street Volume: 638 0
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19
ApproachDel:	14.3	xxxxxx	xxxxxx	xxxxxx

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Peak Hour Delay Signal Warrant Report
Dowling Associates, Inc.

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]

Signal Warrant Rule #2: [approach volume=144]
FAIL - Vehicle-hours less than 5 for two or more lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=983]
FAIL - Approach volume less than 150 for two or more lane approach.

SUCCEED - Total volume greater than or equal to 650 for intersection

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).
with less than four approaches.

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0		0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	1 0 1160 0 0	0 357 18
ApproachDel:	11.4	xxxxxx	250	xxxxxx

xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Syar Mining Traffic Assessment

Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	9	0	196	0	0	0	250	1160	0	0	357	18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	0 1	0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Initial Vol:	0	48	73	69	80	0	0	0	0	79	0	55

Dowling Associates, Inc.

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	0 1	0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Initial Vol:	0	77	76	55	67	0	0	0	0	112	0	107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	64	2	2	5	3	33	15	25	82	7	21	3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	165	5	4	0	2	33	27	110	89	3	40	2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	13.5	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	0 92 0	0 250 158
ApproachDel:	xxxxxx	13.1	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Dowling Associates, Inc.

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):     8.7      Worst Case Level Of Service: B[ 14.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    94    0    10     0   23     9    73   25     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    94    0    10     0   23     9    73   25     0
Added Vol:      0    0     0     0    0     0     0    0     0    66    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    94    0    10     0   23     9   139   25     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   140    0    15     0   34    13   206   37     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   140    0    15     0   34    13   206   37     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   491  498    37  xxxx xxxx xxxxx    48 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   540  477  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   479  406  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.29 0.00  0.01  xxxx xxxx  xxxx  0.13 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.5 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   479 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.2 xxxx xxxxx xxxxx xxxx xxxxx   0.5 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  15.6 xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            14.9            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):     7.3      Worst Case Level Of Service: C[ 16.3]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    68    0     5     0   43    38   148   26     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    68    0     5     0   43    38   148   26     0
Added Vol:      0    0     0     0    0     0     0    0     0    84    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    68    0     5     0   43    38   232   26     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    77    0     6     0   49    43   264   30     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    77    0     6     0   49    43   264   30     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   627  649    30  xxxx xxxx xxxxx    92 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   450  391  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   380  312  1051  xxxx xxxx xxxxx  1515 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.20 0.00  0.01  xxxx xxxx  xxxx  0.17 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.6 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.4 xxxxx xxxx xxxxx   7.9 xxxx xxxxx
LOS by Move:    *    *     *     *    *     A     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   380 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.8 xxxx xxxxx xxxxx xxxx xxxxx   0.6 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  16.9 xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            16.3            xxxxxx           xxxxxx
ApproachLOS:        *                C                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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---------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                    AM Peak Hour - 6-14-07 - No Project
                           Dowling Associates, Inc.
---------------------------------------------------------------------------------
                      Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*********************************************************************************
Average Delay (sec/veh):      4.4       Worst Case Level Of Service: B[ 11.6]
*********************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign       Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0    0    84     0    0     0     0    0     0     0   66     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14    0   184     0    0     0     8  116     0     0  144    72
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    21    0   273     0    0     0    12  172     0     0  214   107
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21    0   273     0    0     0    12  172     0     0  214   107
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  463  517   172  xxxx xxxx xxxxx   321 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  560  465   876  xxxx xxxx xxxxx  1250 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    556  461   876  xxxx xxxx xxxxx  1250 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.31  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  842 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.6 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 11.6 xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:       11.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B               *                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```



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---------------------------------------------------------------------------------
                        Syar Mining Traffic Assessment
                    PM Peak Hour - 6-14-07 - No Project
                           Dowling Associates, Inc.
---------------------------------------------------------------------------------
                      Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*********************************************************************************
Average Delay (sec/veh):      3.7       Worst Case Level Of Service: B[ 10.9]
*********************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign       Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0    0    66     0    0     0     0    0     0     0   84     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40    0   161     0    0     0    17   93     0     0  224    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    45    0   183     0    0     0    19  106     0     0  255   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   45    0   183     0    0     0    19  106     0     0  255   111
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  455  510   106  xxxx xxxx xxxxx   366 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  567  469   954  xxxx xxxx xxxxx  1204 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    560  462   954  xxxx xxxx xxxxx  1204 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.08 0.00  0.19  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  837 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.1 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.9 xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:       10.9           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B               *                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

2000 HCM Unsignalized Method (Future Volume Alternative)

AM Peak Hour - 6-14-07 - No Project

Syar Mining Traffic Assessment

Level Of Service Computation Report

Dowling Associates, Inc.

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 11.7 Worst Case Level Of Service: C[16.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	135	0	0	0	0	15	21	0	185	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	135	0	0	0	0	15	21	0	185	0	0	0
Added Vol:	0	0	0	0	0	66	84	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	0	0	0	0	81	105	0	185	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	201	0	0	0	0	120	156	0	275	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	201	0	0	0	0	120	156	0	275	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	120	xxxx	xxxxx	xxxx	xxxx	xxxxx	401	401	0	xxxx	xxxx	xxxxx
Potent Cap.:	1480	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	541	900	xxxx	xxxx	xxxxx
Move Cap.:	1480	xxxx	xxxxx	xxxx	xxxx	xxxxx	546	467	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.14	xxxx	xxxx	xxxx	xxxx	xxxx	0.29	0.00	0.31	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	729	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	3.9	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.8	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			16.8			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.0 Worst Case Level Of Service: B[13.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	214	0	0	0	0	24	18	0	170	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	214	0	0	0	0	24	18	0	170	0	0	0
Added Vol:	0	0	0	0	0	84	66	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	214	0	0	0	0	108	84	0	170	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	243	0	0	0	0	123	95	0	193	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	243	0	0	0	0	123	95	0	193	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	123	xxxx	xxxxx	xxxx	xxxx	xxxxx	486	486	0	xxxx	xxxx	xxxxx
Potent Cap.:	1477	xxxx	xxxxx	xxxx	xxxx	xxxxx	544	484	900	xxxx	xxxx	xxxxx
Move Cap.:	1477	xxxx	xxxxx	xxxx	xxxx	xxxxx	475	404	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.16	xxxx	xxxx	xxxx	xxxx	xxxx	0.20	0.00	0.21	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	494	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.1	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.8	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			13.8			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Geyserville Avenue at Banti Lane

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: B[10.3]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 1	1 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	118	153	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	118	153	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	118	153	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	0	0	175	227	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	175	227	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.25	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.3			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 Geyserville Avenue at Banti Lane

Average Delay (sec/veh): 4.8 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 1	1 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	185	168	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	185	168	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	185	168	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	0	0	210	191	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	210	191	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	900	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.21	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.1			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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AM Peak Hour 2            Mon Dec 29, 2008 05:35:20                Page 13-1
--------------------------------------------------------------------------------
2000 HCM Unsignalized Method (Future Volume Alternative)
AM Peak Hour - 6-14-07 - No Project
Syar Mining Traffic Assessment
Level Of Service Computation Report
Dowling Associates, Inc.
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):        4.6      Worst Case Level Of Service: A[  9.4]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        6    0   130     0    0     0     2   23     0     0  117     1
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     6    0   130     0    0     0     2   23     0     0  117     1
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     6    0   130     0    0     0     2   23     0     0  117     1
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      9    0   193     0    0     0     3   34     0     0  174     1
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9    0   193     0    0     0     3   34     0     0  174     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  215  215    34  xxxx xxxx xxxxx   175 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  778  686  1045  xxxx xxxx xxxxx  1413 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    777  684  1045  xxxx xxxx xxxxx  1413 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.18  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1029 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.7 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.4 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.4           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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PM Peak Hour 2            Mon Dec 29, 2008 05:35:32                Page 13-1
--------------------------------------------------------------------------------
                       Syar Mining Traffic Assessment
                    PM Peak Hour - 6-14-07 - No Project
                         Dowling Associates, Inc.
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):        3.9      Worst Case Level Of Service: A[  9.2]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        8    0   142     0    0     0     7   26     0     0  182     3
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8    0   142     0    0     0     7   26     0     0  182     3
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     8    0   142     0    0     0     7   26     0     0  182     3
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      9    0   161     0    0     0     8   30     0     0  207     3
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     9    0   161     0    0     0     8   30     0     0  207     3
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  254  256    30  xxxx xxxx xxxxx   210 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  739  652  1051  xxxx xxxx xxxxx  1372 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    736  648  1051  xxxx xxxx xxxxx  1372 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.15  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1027 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.2 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.2           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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                   Syar Mining Traffic Assessment
              AM Peak Hour - 6-14-07 - No Project
                   Dowling Associates, Inc.

                Level Of Service Computation Report
     2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      6.1      Worst Case Level Of Service: B[ 11.3]
********************************************************************************
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:         Include          Include          Include           Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:      0    0     0    20    0     8     0   23     6   120   23     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0    20    0     8     0   23     6   120   23     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0    20    0     8     0   23     6   120   23     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0    30    0    12     0   34     9   178   34     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0    30    0    12     0   34     9   178   34     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   429  434    34  xxxx xxxx xxxxx    43 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   586  518  1045  xxxx xxxx xxxxx  1579 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   530  453  1045  xxxx xxxx xxxxx  1579 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.06 0.00  0.01  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  617 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 11.3 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:    *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            11.3            xxxxxx            xxxxxx
ApproachLOS:       *                 B                *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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                   Syar Mining Traffic Assessment
              PM Peak Hour - 6-14-07 - No Project
                   Dowling Associates, Inc.

                Level Of Service Computation Report
     2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      5.6      Worst Case Level Of Service: B[ 10.4]
********************************************************************************
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:         Include          Include          Include           Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      0    0     0     4    0     4     0   27     2   170   37     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0     4    0     4     0   27     2   170   37     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0     4    0     4     0   27     2   170   37     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0     5    0     5     0   31     2   193   42     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0     5    0     5     0   31     2   193   42     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   460  461    42  xxxx xxxx xxxxx    33 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   563  500  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   504  432  1034  xxxx xxxx xxxxx  1592 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.00  xxxx xxxx  xxxx  0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  678 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.4 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:    *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx            10.4            xxxxxx            xxxxxx
ApproachLOS:       *                 B                *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
---------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*********************************************************************************
Average Delay (sec/veh):      0.7       Worst Case Level Of Service: B[ 10.4]
*********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign         Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  153     0     0  118     0     0     0     0    10     0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  153     0     0  118     0     0     0     0    10     0    10
Added Vol:      0    0     0     0    0     0     0     0     0     0     0     0
PasserByVol:    0    0     0     0    0     0     0     0     0     0     0     0
Initial Fut:    0  153     0     0  118     0     0     0     0    10     0    10
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  227     0     0  175     0     0     0     0    15     0    15
Reduct Vol:     0    0     0     0    0     0     0     0     0     0     0     0
FinalVolume:    0  227     0     0  175     0     0     0     0    15     0    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   403  403   227
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540   817
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540   817
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  697 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.4 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            10.4
ApproachLOS:        *                *                *                B
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```



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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
---------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*********************************************************************************
Average Delay (sec/veh):      0.5       Worst Case Level Of Service: B[ 10.2]
*********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign         Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  168     0     0  185     0     0     0     0    10     0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  168     0     0  185     0     0     0     0    10     0    10
Added Vol:      0    0     0     0    0     0     0     0     0     0     0     0
PasserByVol:    0    0     0     0    0     0     0     0     0     0     0     0
Initial Fut:    0  168     0     0  185     0     0     0     0    10     0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  191     0     0  210     0     0     0     0    11     0    11
Reduct Vol:     0    0     0     0    0     0     0     0     0     0     0     0
FinalVolume:    0  191     0     0  210     0     0     0     0    11     0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   401  401   191
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   609  541   856
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  712 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.2 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            10.2
ApproachLOS:        *                *                *                B
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
******************************************************************************
Average Delay (sec/veh):     4.8      Worst Case Level Of Service: B[ 10.2]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0    0    75    0    6     0   22   31    17   48    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    75    0    6     0   22   31    17   48    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    75    0    6     0   22   31    17   48    0
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0   111    0    9     0   33   46    25   71    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0   111    0    9     0   33   46    25   71    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   178  201   71  xxxx xxxx xxxxx    79 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   817  699  997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   806  687  997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.14 0.00 0.01  xxxx xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  818 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
Shared LOS:     *    *    *     *    B    *     *    *    *     A    *    *
ApproachDel:     xxxxxx            10.2            xxxxxx           xxxxxx
ApproachLOS:        *                B               *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```



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Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
******************************************************************************
Average Delay (sec/veh):     2.2      Worst Case Level Of Service: A[  9.8]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0    36    0    4     0   58   53    16   62    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    36    0    4     0   58   53    16   62    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    36    0    4     0   58   53    16   62    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0    41    0    5     0   66   60    18   70    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0    41    0    5     0   66   60    18   70    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   203  233   70  xxxx xxxx xxxxx   126 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   790  671  998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   783  662  998  xxxx xxxx xxxxx  1473 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.05 0.00 0.00  xxxx xxxx  xxxx  0.01 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  800 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx  9.8 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:     *    *    *     *    A    *     *    *    *     A    *    *
ApproachDel:     xxxxxx             9.8            xxxxxx           xxxxxx
ApproachLOS:        *                A               *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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AM Peak Hour 2          Mon Dec 29, 2008 05:35:20             Page 17-1
------------------------------------------------------------------------
                     Syar Mining Traffic Assessment
                  AM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
************************************************************************
Average Delay (sec/veh):     3.1      Worst Case Level Of Service: A[ 10.0]
************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:          Include         Include         Include         Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29    0    40     0    0     0    13   93     0     0   42    33
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    43    0    59     0    0     0    19  138     0     0   62    49
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   43    0    59     0    0     0    19  138     0     0   62    49
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  264  288   138  xxxx xxxx xxxxx   111 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  730  625   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    722  617   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.00  0.06  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  823 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.0 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:       10.0           xxxxxx          xxxxxx          xxxxxx
ApproachLOS:         A               *               *               *
************************************************************************
Note: Queue reported is the number of cars per lane.
************************************************************************
```



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PM Peak Hour 2          Mon Dec 29, 2008 05:35:32             Page 17-1
------------------------------------------------------------------------
                     Syar Mining Traffic Assessment
                  PM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
************************************************************************
Average Delay (sec/veh):     3.3      Worst Case Level Of Service: A[  9.6]
************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:          Include         Include         Include         Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   28    3    58     0    0     0    24   75     0     0   44    80
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    32    3    66     0    0     0    27   85     0     0   50    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   32    3    66     0    0     0    27   85     0     0   50    91
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  235  281    85  xxxx xxxx xxxxx   141 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  757  631   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    746  619   979  xxxx xxxx xxxxx  1455 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.01  0.07  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  876 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:        9.6           xxxxxx          xxxxxx          xxxxxx
ApproachLOS:         A               *               *               *
************************************************************************
Note: Queue reported is the number of cars per lane.
************************************************************************
```

AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.200
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.7
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	82	9	0	0	16	24	33	0	156	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	9	0	0	16	24	33	0	156	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	82	9	0	0	16	24	33	0	156	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	0.01	0.82	0.00	0.00	0.00
Final Sat.:	700	76	0	0	350	509	163	0	780	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	xxxx	xxxx	0.05	0.05	0.20	0.00	0.20	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:		8.0			7.2			7.6			xxxxxx	
Delay Adj:		1.00			1.00			1.00			xxxxx	
ApprAdjDel:		8.0			7.2			7.6			xxxxxx	
LOS by Appr:		A			A			A			*	
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.169
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.7
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	28	0	0	18	27	17	0	84	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	106	32	0	0	20	31	19	0	95	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	32	0	0	20	31	19	0	95	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	106	32	0	0	20	31	19	0	95	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.17	0.00	0.83	0.00	0.00	0.00
Final Sat.:	625	188	0	0	357	536	152	0	753	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	xxxx	xxxx	0.06	0.06	0.13	xxxx	0.13	xxxx	xxxx	xxxx
Crit Moves:		****				****	****					
Delay/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.2	0.0	0.0	7.1	7.1	7.4	0.0	7.4	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	*	A	*	*	*
ApproachDel:		8.2			7.1			7.4			xxxxxx	
Delay Adj:		1.00			1.00			1.00			xxxxx	
ApprAdjDel:		8.2			7.1			7.4			xxxxxx	
LOS by Appr:		A			A			A			*	
AllWayAvgQ:	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

```
2000 HCM Unsignalized Method (Future Volume Alternative)
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Level Of Service Computation Report
Dowling Associates, Inc.
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28    0     0   27    0     0    0    0     0    0    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28    0     0   27    0     0    0    0     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0   28    0     0   27    0     0    0    0     0    0    0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   42    0     0   40    0     0    0    0     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0   42    0     0   40    0     0    0    0     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx    82   82    42
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   925  812  1035
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   925  812  1035
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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--------------------------------------------------------------------------------
                       Syar Mining Traffic Assessment
                    PM Peak Hour - 6-14-07 - No Project
                          Dowling Associates, Inc.
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:     North Bound      South Bound                       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R                    L  -  T  -  R
------------|---------------||---------------|East Bound--R---||---------------|
Control:     Uncontrolled     Uncontrolled                       Stop Sign
Rights:         Include          Include                          Include
Lanes:       0  0  1  0  0   0  0  1  0  0  Stop Sign        0  0  1! 0  0
------------|---------------||---------------|0--0--0--0--0---||---------------|
Volume Module:                              Include
Base Vol:       0   45    0     0   45    0        0      0     0    0    0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45    0     0   45    0 0      0      0     0    0    0
Added Vol:      0    0    0     0    0    0        0      0     0    0    0
PasserByVol:    0    0    0     0    0    0 0      0      0     0    0    0
Initial Fut:    0   45    0     0   45    0 0      0      0     0    0    0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   51    0     0   51    0        0      0     0    0    0
Reduct Vol:     0    0    0     0    0    0        0      0     0    0    0
FinalVolume:    0   51    0     0   51    0 0      0      0     0    0    0
------------|---------------||---------------|0------0--------||---------------|
Critical Gap Module:                        0
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   102  102    51
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   901  792  1023
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *          *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *          *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx                            xxxxxx
ApproachLOS:        *                *           *                     *
*****************************************xxxxxx*********************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
                                             *
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	42	0	0	40	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	42	0	0	40	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	51	0	0	51	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	51	0	0	51	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

```
AM Peak Hour 2          Mon Dec 29, 2008 05:35:20               Page 21-1
-------------------------------------------------------------------------------
                     Syar Mining Traffic Assessment
                   AM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):     32.9       Worst Case Level Of Service: F[120.6]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign        Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    19    0   186     0  454     9   250   96     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    19    0   186     0  454     9   250   96     0
Added Vol:      0    0     0    66    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    85    0   186     0  454     9   250   96     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   126    0   276     0  674    13   371  143     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   126    0   276     0  674    13   371  143     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1567 1573   143  xxxx xxxx xxxxx   688 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   124  111   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    85   66   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  1.49 0.00  0.30  xxxx xxxx  xxxx  0.41 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.3  xxxx xxxx xxxxx   2.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  10.7 xxxxx xxxx xxxxx  11.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     B    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 361.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           120.6            xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
PM Peak Hour 2          Mon Dec 29, 2008 05:35:32               Page 21-1
-------------------------------------------------------------------------------
                     Syar Mining Traffic Assessment
                   PM Peak Hour - 6-14-07 - No Project
                        Dowling Associates, Inc.
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):      5.8       Worst Case Level Of Service: B[ 13.8]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign        Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    15    1   280     0  414    15    79  130     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    15    1   280     0  414    15    79  130     0
Added Vol:      0    0     0    84    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    99    1   280     0  414    15    79  130     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   113    1   318     0  470    17    90  148     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   113    1   318     0  470    17    90  148     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   806  815   148  xxxx xxxx xxxxx   488 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   354  314   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   332  288   904  xxxx xxxx xxxxx  1086 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.34 0.00  0.35  xxxx xxxx  xxxx  0.08 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.6  xxxx xxxx xxxxx   0.3 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  11.1 xxxxx xxxx xxxxx   8.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     A    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   331 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  21.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            13.8            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Average Delay (sec/veh): 4.7 Worst Case Level Of Service: C[16.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	5	2	137	0	0	0	254	224	0	0	342	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	2	137	0	0	0	254	224	0	0	342	19
Added Vol:	0	0	0	0	0	0	0	66	0	0	0	84
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	5	2	137	0	0	0	254	290	0	0	342	103
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	7	3	204	0	0	0	377	431	0	0	508	153
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	3	204	0	0	0	377	431	0	0	508	153
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1770	1847	431	xxxx	xxxx	xxxxx	661	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	93	76	629	xxxx	xxxx	xxxxx	937	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	64	45	629	xxxx	xxxx	xxxxx	937	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.12	0.07	0.32	xxxx	xxxx	xxxx	0.40	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.4	xxxx	xxxx	xxxxx	2.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	13.4	xxxxx	xxxx	xxxxx	11.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	B	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	57	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	81.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	F	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	16.8			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	C			*			*			*		

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: B[12.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	9	0	196	0	0	0	250	169	0	0	357	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	0	196	0	0	0	250	169	0	0	357	18
Added Vol:	0	0	0	0	0	0	0	84	0	0	0	66
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	0	196	0	0	0	250	253	0	0	357	84
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	10	0	223	0	0	0	284	288	0	0	406	95
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	10	0	223	0	0	0	284	288	0	0	406	95
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1309	1357	288	xxxx	xxxx	xxxxx	501	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	177	150	756	xxxx	xxxx	xxxxx	1074	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	141	111	756	xxxx	xxxx	xxxxx	1074	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.07	0.00	0.29	xxxx	xxxx	xxxx	0.26	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.2	xxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	11.7	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	141	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	32.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	D	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	12.6			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

AM Peak Hour - 6-14-07 - No Project
Syar Mining Traffic Assessment
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.296
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 9.1
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	71	108	103	119	0	0	0	0	117	0	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	71	108	103	119	0	0	0	0	117	0	82
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	71	108	103	119	0	0	0	0	117	0	82
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	321	489	346	402	0	0	0	0	434	0	302
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.30	0.30	xxxx	xxxx	xxxx	xxxx	0.27	xxxx	0.27
Crit Moves:		****			****					****		
Delay/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	8.4			9.5			xxxxxx			9.2		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	8.4			9.5			xxxxxx			9.2		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.3	0.3	0.3	0.4	0.4	0.4	0.0	0.0	0.0	0.3	0.3	0.3

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.317
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	88	86	63	76	0	0	0	0	127	0	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	88	86	63	76	0	0	0	0	127	0	122
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	88	86	63	76	0	0	0	0	127	0	122
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	400	394	327	399	0	0	0	0	401	0	384
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.19	0.19	xxxx	xxxx	xxxx	xxxx	0.32	xxxx	0.32
Crit Moves:		****			****							
Delay/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.5	8.5	8.8	8.8	0.0	0.0	0.0	0.0	9.3	0.0	9.3
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	8.5			8.8			xxxxxx			9.3		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	8.5			8.8			xxxxxx			9.3		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.4	0.4	0.4

Note: Queue reported is the number of cars per lane.

AM Peak Hour Traffic 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.204
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	95	3	3	7	4	49	22	37	122	10	31	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	3	3	7	4	49	22	37	122	10	31	4
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	95	3	3	7	4	49	22	37	122	10	31	4
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	706	22	22	103	62	682	109	182	596	177	530	76
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.13	0.07	0.07	0.07	0.20	0.20	0.20	0.06	0.06	0.06
Crit Moves:	****				****			****			****	
Delay/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.3			7.3			7.9			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.3			7.3			7.9			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.258
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.4
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign						Stop Sign		
Rights:	Include			Include						Include		
Min. Green:	0	0	0	0	0	0	Stop Sign	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 0 1 0			1 0 1! 0 Include		0	0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33		19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1700 1.00		1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	27	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0		0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	0	19	89	3	40	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	0 1700 1.00		1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88 0.88		0.88	0.88	0.88	0.88
PHF Volume:	188	6	5	0	2	38		22	101	3	45	2
Reduct Vol:	0	0	0	0	0	0	31	0	0	0	0	0
Reduced Vol:	188	6	5	0	2	38		22	101	3	45	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	0 3100 1.00		1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00		1.00	1.00	1.00	1.00
FinalVolume:	188	6	5	0	2	38		22	101	3	45	2
Saturation Flow Module:							31					
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00		1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20 0.14		0.66	0.07	0.89	0.04
Final Sat.:	726	22	18	0	49	803	166	117	548	50	662	33
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.26	xxxx	0.05	0.05	0.18 0.18		0.18	0.07	0.07	0.07
Crit Moves:		****				****					****	
Delay/Veh:	9.1	9.1	9.1	0.0	7.2	7.2		8.0	8.0	7.9	7.9	7.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	8.0 1.00 1.00		1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.1	9.1	0.0	7.2	7.2	****	8.0	8.0	7.9	7.9	7.9
LOS by Move:	A	A	A	*	A	A	8.0	A	A	A	A	A
ApproachDel:		9.1			7.2						7.9	
Delay Adj:		1.00			1.00		A				1.00	
ApprAdjDel:		9.1			7.2						7.9	
LOS by Appr:		A			A						A	
AllWayAvgQ:	0.3	0.3	0.3	0.0	0.0	0.0	8.0 1.00 0.2 8.0	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

```
Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
********************************************************************************
Average Delay (sec/veh):      3.3       Worst Case Level Of Service: B[ 13.5]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:           Include          Include          Include           Include
Lanes:        0  0  0  0  0   1  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0     0   104    0     0     4  116     0     0  132    77
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0   104    0     0     4  116     0     0  132    77
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0   104    0     0     4  116     0     0  132    77
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   154    0     0     6  172     0     0  196   114
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   154    0     0     6  172     0     0  196   114
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   437 xxxx xxxxx   310 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   580 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   578 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.27 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   1.1 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  13.5 xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     B    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     A    *     *     *    *     *
ApproachDel:     xxxxxx            13.5            xxxxxx            xxxxxx
ApproachLOS:        *                B                *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
********************************************************************************
Average Delay (sec/veh):      2.0       Worst Case Level Of Service: B[ 13.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:           Include          Include          Include           Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0     0    82    0     5     5   92     0     0  250   158
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    82    0     5     5   92     0     0  250   158
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    82    0     5     5   92     0     0  250   158
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0    93    0     6     6  105     0     0  284   180
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0    93    0     6     6  105     0     0  284   180
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   490  490   374   464 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   541  482   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   539  479   677  1108 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.17 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  545 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.7 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 13.1 xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    B     *     A    *     *     *    *     *
ApproachDel:     xxxxxx            13.1            xxxxxx            xxxxxx
ApproachLOS:        *                B                *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Scenario Report

Scenario:	AM Peak Hour 3
Command:	AM Peak Hour 3
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 3
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 3

Scenario Report

Scenario:	PM Peak Hour 3
Command:	PM Peak Hour 3
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 3
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 3

Trip Generation Report

Forecast for AM Peak Hour 3

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
3	Route 3	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
Zone 3 Subtotal						84	66	150	100.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 3

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
3	Route 3	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 3 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Turning Movement Report
AM Peak Hour 3

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	94	66	10	0	23	9	73	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	14	84	100	0	0	0	8	116	0	0	78	72	472
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	0	0	0	0	0	0	66	0	0	66
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	0	0	84	0	0	0	0	0	0	0	66	0	150

Turning Movement Report
PM Peak Hour 3

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	0	0	0	0	0	0	84	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	0	0	66	0	0	0	0	0	0	0	84	0	150

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	118	153	0	0	0	0	0	271
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	130	0	0	0	2	23	0	0	117	1	279
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	20	0	8	0	23	6	120	23	0	200
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	185	168	0	0	0	0	0	353
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	0	142	0	0	0	7	26	0	0	182	3	368
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	4	0	27	2	170	37	0	244
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90

Volume Type	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	66	0	0	0	0	0	0	0	150
Total	0	84	0	0	66	0	0	0	0	0	0	0	150
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	84	0	0	0	0	0	0	0	150
Total	0	66	0	0	84	0	0	0	0	0	0	0	150
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Link Volume Report
AM Peak Hour 3

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	148	148	170	0	170	32	35	67	98	117	215	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	198	0	198	0	164	164	124	92	216	150	216	366	944
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	66	66	0	0	0	0	0	0	66	0	66	132
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	84	0	84	0	0	0	0	66	66	66	84	150	300

Link Volume Report
PM Peak Hour 3

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	84	84	0	0	0	0	0	0	84	0	84	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	66	0	66	0	0	0	0	84	84	84	66	150	300

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	118	153	271	153	118	271	0	0	0	542
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	136	0	136	0	3	3	25	123	148	118	153	271	558
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	126	126	28	0	28	29	31	60	143	43	186	400
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	185	168	353	168	185	353	0	0	0	706
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	150	0	150	0	10	10	33	190	223	185	168	353	736
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	172	172	8	0	8	29	41	70	207	31	238	488
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	66	84	150	0	0	0	0	0	0	300
Total	84	66	150	66	84	150	0	0	0	0	0	0	300
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	84	66	150	0	0	0	0	0	0	300
Total	66	84	150	84	66	150	0	0	0	0	0	0	300
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	11.6	0.000	B	14.0	0.000	+ 2.456 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.4	0.000	B	14.6	0.000	+ 4.183 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	11.7	0.000	B	11.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.4	0.000	A	9.4	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.3	0.000	B	11.3	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.200	A	7.7	0.200	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	C	15.9	0.000	F	120.6	0.000	+104.613 D/V
# 24 Highway 101 nb ramp at Healdsb	B	14.3	0.000	C	16.8	0.000	+ 2.473 D/V
# 31 Geyserville Avenue at Highway	A	9.1	0.296	A	9.1	0.296	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.9	0.204	A	7.9	0.204	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.5	0.000	B	13.5	0.000	+ 0.000 D/V

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	C	15.6	0.000	D	27.2	0.000	+11.512 D/V
# 5 Highway 101 nb at Lytton Sprin	B	11.4	0.000	C	16.2	0.000	+ 4.851 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	12.0	0.000	B	12.0	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.5	0.000	B	10.5	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.6	0.000	A	9.6	0.000	+ 0.000 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.4	0.000	B	11.4	0.000	+ 0.000 D/V
# 15 Geyserville Avenue at Hamilton	B	11.0	0.000	B	11.0	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	8.1	0.227	A	8.1	0.227	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	13.7	0.000	C	21.8	0.000	+ 8.141 D/V
# 24 Highway 101 nb ramp at Healdsb	B	13.8	0.000	C	16.7	0.000	+ 2.857 D/V
# 31 Geyserville Avenue at Highway	B	10.2	0.438	B	10.2	0.438	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	9.2	0.352	A	9.2	0.352	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	C	16.3	0.000	C	16.3	0.000	+ 0.000 D/V

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

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Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	68	0	5	0	43	38	148	26	0
ApproachDel:	xxxxxx			15.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 43 38	148 26 0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
---------------------------------------------------------------------------
                  Peak Hour Delay Signal Warrant Report
***************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
***************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:   14    0   100     0    0    0     8  116    0     0   78    72
ApproachDel:      10.4          xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
---------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


```
---------------------------------------------------------------------------
                  Peak Hour Delay Signal Warrant Report
***************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
***************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
Initial Vol:   40    0    95     0    0    0    17   90    0     0  140    98
ApproachDel:      11.4          xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
---------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	14	0	100	0	0	0	8	116	0	0	78	72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	40	0	95	0	0	0	17	90	0	0	140	98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	0	0	0	0	0	0	0	1	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	135		0		0	0		0		15	21		0		185	0		0		0
ApproachDel:	xxxxxx					xxxxxx					11.7					xxxxxx				

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	0	0	0	0	0	0	0	1	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	214		0		0	0		0		24	18		0		170	0		0		0
ApproachDel:	xxxxxx					xxxxxx					12.0					xxxxxx				

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	135 0 0	0 0 15	21 0 185	0 0 0

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	214 0 0	0 0 24	18 0 170	0 0 0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.3			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=153]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=271]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.5			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.5]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=168]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=353]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1
ApproachDel:	9.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3
ApproachDel:	9.6	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                  Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
Initial Vol:    6    0   130     0    0     0     2   23     0     0  117     1
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            143
Minor Approach Volume:          136
Minor Approach Volume Threshold: 738
--------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


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                  Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
Initial Vol:    8    0   142     0    0     0     7   20     0     0  182     3
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            218
Minor Approach Volume:          150
Minor Approach Volume Threshold: 626
--------------------------------------------------------------------------------
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SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	20	0	8	0	23	6	120	23	0
ApproachDel:	xxxxxx			11.3			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	4	0	4	0	27	2	170	37	0
ApproachDel:	xxxxxx			11.4			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 21 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.4

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	11.0

Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0    0  0  1! 0  0    0  0  0  1  0    0  1  0  0  0
Initial Vol:    0    0    0     75    0    6     0   22   31     17   48    0
ApproachDel:     xxxxxx           10.2           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.
--------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


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--------------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0    0  0  1! 0  0    0  0  0  1  0    0  1  0  0  0
Initial Vol:    0    0    0     36    0    4     0   58   53     16   62    0
ApproachDel:     xxxxxx           10.3           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33
ApproachDel:	10.0			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	28	3	58	0	0	0	24	75	0	0	44	80
ApproachDel:	10.2			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 76 0	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	55 6 0	0 11 16	22 0 105	0 0 0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	93 28 0	0 18 27	17 0 84	0 0 0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Initial Vol:	0	0	0	19	0	186	0	454	9	250	96	0
ApproachDel:	xxxxxx			15.9			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Initial Vol:	0	0	0	15	1	280	0	411	15	79	130	0
ApproachDel:	xxxxxx			13.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=1.1]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19
ApproachDel:	14.3			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	9	0	196	0	0	0	169	250	0	0	357	18
ApproachDel:	13.8			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.8]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 169 0	0 357 18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	64	2	2	5	3	33	15	25	82	7	21	3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	165	5	4	0	2	33	27	110	89	3	40	2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	13.5	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158
ApproachDel:	xxxxxx	16.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      9.8       Worst Case Level Of Service: B[ 14.0]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        0    0     0    94    0    10     0   23     9    73   25     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    94    0    10     0   23     9    73   25     0
Added Vol:       0    0     0     0   66     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    94   66    10     0   23     9    73   25     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   140   98    15     0   34    13   108   37     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   140   98    15     0   34    13   108   37     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   295  302    37  xxxx xxxx xxxxx    48 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   700  614  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   661  569  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.21 0.17  0.01  xxxx xxxx  xxxx  0.07 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:     *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   620 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.8 xxxx xxxxx xxxxx xxxx xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  14.4 xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:      *    *     *     B    *     *     *    *     *     A    *     *
ApproachDel:      xxxxxx            14.0            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):     13.2       Worst Case Level Of Service: D[ 27.2]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0    68    0     5     0   43    38   148   26     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    68    0     5     0   43    38   148   26     0
Added Vol:       0    0     0     0   84     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    68   84     5     0   43    38   148   26     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   101  125     7     0   64    56   220   39     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   101  125     7     0   64    56   220   39     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   570  599    39  xxxx xxxx xxxxx   120 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   486  418  1039  xxxx xxxx xxxxx  1480 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   423  347  1039  xxxx xxxx xxxxx  1480 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.24 0.36  0.01  xxxx xxxx  xxxx  0.15 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.5 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.9 xxxx xxxxx
LOS by Move:     *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   377 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   3.7 xxxx xxxxx xxxxx xxxx xxxxx   0.5 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  27.8 xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx
Shared LOS:      *    *     *     D    *     *     *    *     *     A    *     *
ApproachDel:      xxxxxx            27.2            xxxxxx           xxxxxx
ApproachLOS:        *                D                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
****************************************************************************
Average Delay (sec/veh):      6.2      Worst Case Level Of Service: B[ 14.6]
****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0   84     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   84   100     0    0     0     8  116     0     0   78    72
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    21  125   149     0    0     0    12  172     0     0  116   107
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21  125   149     0    0     0    12  172     0     0  116   107
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  365  419   172  xxxx xxxx xxxxx   223 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  638  528   876  xxxx xxxx xxxxx  1358 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    634  524   876  xxxx xxxx xxxxx  1358 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.03 0.24  0.17  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  668 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 14.6 xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      14.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
```



```
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
****************************************************************************
Average Delay (sec/veh):      6.2      Worst Case Level Of Service: C[ 16.2]
****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0   66     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40   66    95     0    0     0    17   93     0     0  140    98
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    59   98   141     0    0     0    25  138     0     0  208   146
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   59   98   141     0    0     0    25  138     0     0  208   146
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  469  542   138  xxxx xxxx xxxxx   354 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  556  450   916  xxxx xxxx xxxxx  1216 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    547  441   916  xxxx xxxx xxxxx  1216 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.11 0.22  0.15  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  615 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.7 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 16.2 xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     A    *     *     *    *     *
ApproachDel:      16.2           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        C               *                *                *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: B[11.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	135	0	0	0	0	15	21	0	185	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	135	0	0	0	0	15	21	0	185	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	0	0	0	0	15	21	0	185	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	201	0	0	0	0	22	31	0	275	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	201	0	0	0	0	22	31	0	275	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	22	xxxx	xxxxx	xxxx	xxxx	xxxxx	401	401	0	xxxx	xxxx	xxxxx
Potent Cap.:	1606	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	541	900	xxxx	xxxx	xxxxx
Move Cap.:	1606	xxxx	xxxxx	xxxx	xxxx	xxxxx	551	473	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.12	xxxx	xxxx	xxxx	xxxx	xxxx	0.06	0.00	0.31	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	845	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.7	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.7	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.7			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.2 Worst Case Level Of Service: B[12.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0	0 0	0 0	0	0 1	0 0	1!	0 0	0 0	0	0 0
Volume Module:												
Base Vol:	214	0	0	0	0	24	18	0	170	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	214	0	0	0	0	24	18	0	170	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	214	0	0	0	0	24	18	0	170	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	318	0	0	0	0	36	27	0	253	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	318	0	0	0	0	36	27	0	253	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	36	xxxx	xxxxx	xxxx	xxxx	xxxxx	636	636	0	xxxx	xxxx	xxxxx
Potent Cap.:	1588	xxxx	xxxxx	xxxx	xxxx	xxxxx	445	398	900	xxxx	xxxx	xxxxx
Move Cap.:	1588	xxxx	xxxxx	xxxx	xxxx	xxxxx	377	318	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.20	xxxx	xxxx	xxxx	xxxx	xxxx	0.07	0.00	0.28	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	794	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.6	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.0	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			12.0			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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---------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*********************************************************************************
Average Delay (sec/veh):      5.8      Worst Case Level Of Service: B[ 10.3]
*********************************************************************************
Approach:      North Bound     South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled    Uncontrolled      Stop Sign        Stop Sign
Rights:          Include         Include         Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  1   1  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0     0    0   118   153    0     0     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0     0    0   118   153    0     0     0    0     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0     0    0   118   153    0     0     0    0     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0     0    0   175   227    0     0     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0     0    0   175   227    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.25 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx          xxxxxx            10.3            xxxxxx
ApproachLOS:        *               *                 B                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```



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---------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*********************************************************************************
Average Delay (sec/veh):      5.0      Worst Case Level Of Service: B[ 10.5]
*********************************************************************************
Approach:      North Bound     South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled    Uncontrolled      Stop Sign        Stop Sign
Rights:          Include         Include         Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  1   1  0  0  0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0     0    0   185   168    0     0     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0     0    0   185   168    0     0     0    0     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0     0    0   185   168    0     0     0    0     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0     0    0   275   250    0     0     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0     0    0   275   250    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.28 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx          xxxxxx            10.5            xxxxxx
ApproachLOS:        *               *                 B                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
******************************************************************************
Average Delay (sec/veh):      4.6      Worst Case Level Of Service: A[  9.4]
******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0   0  1!  0   0   0   0   0   0   0   0   1   0   0   0   0   0   0   1   0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       6    0   130     0    0     0     2   23     0     0  117     1
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6    0   130     0    0     0     2   23     0     0  117     1
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6    0   130     0    0     0     2   23     0     0  117     1
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     9    0   193     0    0     0     3   34     0     0  174     1
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    0   193     0    0     0     3   34     0     0  174     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  215  215    34  xxxx xxxx xxxxx   175 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  778  686  1045  xxxx xxxx xxxxx  1413 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    777  684  1045  xxxx xxxx xxxxx  1413 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.18  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1029 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.7 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.4 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.4           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```


Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
******************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
******************************************************************************
Average Delay (sec/veh):      4.1      Worst Case Level Of Service: A[  9.6]
******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0   0  1!  0   0   0   0   0   0   0   0   1   0   0   0   0   0   0   1   0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       8    0   142     0    0     0     7   26     0     0  182     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    0   142     0    0     0     7   26     0     0  182     3
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    8    0   142     0    0     0     7   26     0     0  182     3
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    12    0   211     0    0     0    10   39     0     0  270     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   12    0   211     0    0     0    10   39     0     0  270     4
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  332  334    39  xxxx xxxx xxxxx   275 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  667  589  1039  xxxx xxxx xxxxx  1300 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    663  585  1039  xxxx xxxx xxxxx  1300 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.00  0.20  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1008 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.8 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx  9.6 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:         9.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          A               *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
------------------------------------------------------------------------------

                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
******************************************************************************
Average Delay (sec/veh):      6.1      Worst Case Level Of Service: B[ 11.3]
******************************************************************************
Approach:     North Bound     South Bound     East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include         Include         Include         Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0   20    0     8    0   23     6  120   23     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0   20    0     8    0   23     6  120   23     0
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0   20    0     8    0   23     6  120   23     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0   30    0    12    0   34     9  178   34     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0   30    0    12    0   34     9  178   34     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   429  434    34  xxxx xxxx xxxxx    43 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   586  518  1045  xxxx xxxx xxxxx  1579 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   530  453  1045  xxxx xxxx xxxxx  1579 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.06 0.00  0.01  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *    *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  617 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 11.3 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *    *    *     *     A    *     *
ApproachDel:     xxxxxx            11.3            xxxxxx          xxxxxx
ApproachLOS:        *                B                *               *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
******************************************************************************
Average Delay (sec/veh):      5.7      Worst Case Level Of Service: B[ 11.4]
******************************************************************************
Approach:     North Bound     South Bound     East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include         Include         Include         Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    4    0     4    0   27     2  170   37     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0    4    0     4    0   27     2  170   37     0
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0    4    0     4    0   27     2  170   37     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0    6    0     6    0   40     3  253   55     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0    6    0     6    0   40     3  253   55     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   602  603    55  xxxx xxxx xxxxx    43 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   466  416  1018  xxxx xxxx xxxxx  1579 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   399  338  1018  xxxx xxxx xxxxx  1579 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 0.00  0.01  xxxx xxxx  xxxx  0.16 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.6 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *    *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  574 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx   0.6 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 11.4 xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *    *    *     *     A    *     *
ApproachDel:     xxxxxx            11.4            xxxxxx          xxxxxx
ApproachLOS:        *                B                *               *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
***************************************************************************
Average Delay (sec/veh):      0.7      Worst Case Level Of Service: B[ 10.4]
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  153    0     0  118    0     0    0    0    10    0   10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  153    0     0  118    0     0    0    0    10    0   10
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0  153    0     0  118    0     0    0    0    10    0   10
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0  227    0     0  175    0     0    0    0    15    0   15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0  227    0     0  175    0     0    0    0    15    0   15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5  6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0  3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   403  403  227
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540  817
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540  817
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00 0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  697 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.4 xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    B    *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            10.4
ApproachLOS:        *                *                *                B
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
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---------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
***************************************************************************
Average Delay (sec/veh):      0.6      Worst Case Level Of Service: B[ 11.0]
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  168    0     0  185    0     0    0    0    10    0   10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  168    0     0  185    0     0    0    0    10    0   10
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0  168    0     0  185    0     0    0    0    10    0   10
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0  250    0     0  275    0     0    0    0    15    0   15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0  250    0     0  275    0     0    0    0    15    0   15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5  6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0  3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   524  524  250
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   517  461  794
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   517  461  794
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.03 0.00 0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  626 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.0 xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    B    *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            11.0
ApproachLOS:        *                *                *                B
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):     4.8      Worst Case Level Of Service: B[ 10.2]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    75    0     6    0   22    31   17   48     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0    75    0     6    0   22    31   17   48     0
Added Vol:      0    0     0     0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0     0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0    75    0     6    0   22    31   17   48     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0   111    0     9    0   33    46   25   71     0
Reduct Vol:     0    0     0     0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0   111    0     9    0   33    46   25   71     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   178  201    71  xxxx xxxx xxxxx    79 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   817  699   997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   806  687   997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.14 0.00  0.01  xxxx xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *    *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  818 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *    *    *     *     A    *     *
ApproachDel:     xxxxxx            10.2            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```


Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Average Delay (sec/veh):     2.3      Worst Case Level Of Service: B[ 10.3]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    36    0     4    0   58    53   16   62     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0    36    0     4    0   58    53   16   62     0
Added Vol:      0    0     0     0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0     0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0    36    0     4    0   58    53   16   62     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0    53    0     6    0   86    79   24   92     0
Reduct Vol:     0    0     0     0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0    53    0     6    0   86    79   24   92     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   265  305    92  xxxx xxxx xxxxx   165 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   728  612   971  xxxx xxxx xxxxx  1426 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   719  602   971  xxxx xxxx xxxxx  1426 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.07 0.00  0.01  xxxx xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *    *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  738 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *    *    *     *     A    *     *
ApproachDel:     xxxxxx            10.3            xxxxxx           xxxxxx
ApproachLOS:        *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      3.1      Worst Case Level Of Service: A[ 10.0]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       29    0    40    0    0     0   13   93     0    0   42    33
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    29    0    40    0    0     0   13   93     0    0   42    33
Added Vol:       0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:     0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    29    0    40    0    0     0   13   93     0    0   42    33
User Adj:     1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     43    0    59    0    0     0   19  138     0    0   62    49
Reduct Vol:      0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    43    0    59    0    0     0   19  138     0    0   62    49
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  264  288   138  xxxx xxxx xxxxx   111 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  730  625   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    722  617   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.00  0.06  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *    *    *     *     A    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  823 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.0 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *    *    *     *     A    *     *    *    *     *
ApproachDel:       10.0           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      3.5      Worst Case Level Of Service: B[ 10.2]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       28    3    58    0    0     0   24   75     0    0   44    80
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    28    3    58    0    0     0   24   75     0    0   44    80
Added Vol:       0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:     0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    28    3    58    0    0     0   24   75     0    0   44    80
User Adj:     1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     42    4    86    0    0     0   36  111     0    0   65   119
Reduct Vol:      0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    42    4    86    0    0     0   36  111     0    0   65   119
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  308  367   111  xxxx xxxx xxxxx   184 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  689  565   947  xxxx xxxx xxxxx  1403 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    675  550   947  xxxx xxxx xxxxx  1403 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.01  0.09  xxxx xxxx  xxxx  0.03 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *    *    *     *     A    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  823 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    B     *    *    *     *     A    *     *    *    *     *
ApproachDel:       10.2           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Level Of Service Computation Report

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100		Critical Vol./Cap.(X):	0.200
Loss Time (sec): 0 (Y+R=4.0 sec)		Average Delay (sec/veh):	7.7
Optimal Cycle: 0		Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	82	9	0	0	16	24	33	0	156	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	9	0	0	16	24	33	0	156	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	82	9	0	0	16	24	33	0	156	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	0.01	0.82	0.00	0.00	0.00
Final Sat.:	700	76	0	0	350	509	163	0	780	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	xxxx	xxxx	0.05	0.05	0.20	0.00	0.20	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:	8.0			7.2			7.6			xxxxxx		
Delay Adj:	1.00			1.00			1.00			xxxxx		
ApprAdjDel:	8.0			7.2			7.6			xxxxxx		
LOS by Appr:	A			A			A			*		
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100		Critical Vol./Cap.(X):	0.227
Loss Time (sec): 0 (Y+R=4.0 sec)		Average Delay (sec/veh):	8.1
Optimal Cycle: 0		Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R			R	L	T	R
Control:	Stop Sign			Stop Sign						Stop Sign		
Rights:	Include			Include						Include		
Min. Green:	0	0	0	0	0	0	Stop Sign	0	0	0	0	0
Lanes:	0 1 0 0 0			0 0 0 1 0			Include 0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27		0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1700	1.00 0	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27			84	0	0	0
Added Vol:	0	0	0	0	0	0	17	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0			0	0	0	0
Initial Fut:	93	28	0	0	18	27	0	0 0	84	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	0 1731	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88 0	0.88	0.88	0.88	0.88
PHF Volume:	138	42	0	0	27	40			125	0	0	0
Reduct Vol:	0	0	0	0	0	0	25	0 0	0	0	0	0
Reduced Vol:	138	42	0	0	27	40			125	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	0 2500	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 0	1.00	1.00	1.00	1.00
FinalVolume:	138	42	0	0	27	40			125	0	0	0
Saturation Flow Module:							25					
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.16	0.01 0	0.83	0.00	0.00	0.00
Final Sat.:	610	184	0	0	343	515	146		722	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	xxxx	xxxx	0.08	0.08	0.17	0.00	0.17	xxxx	xxxx	xxxx
Crit Moves:	****					****						
Delay/Veh:	8.7	8.7	0.0	0.0	7.4	7.4		7.7	7.7	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	7.7	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.7	8.7	0.0	0.0	7.4	7.4	1.00	1.00 7.7	7.7	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	7.7	A	A	*	*	*
ApproachDel:	8.7			7.4						xxxxxx		
Delay Adj:	1.00			1.00			A***			xxxxx		
ApprAdjDel:	8.7			7.4						xxxxxx		
LOS by Appr:	A			A						*		
AllWayAvgQ:	0.3	0.3	0.3	0.1	0.1	0.1	7.7 1.00	0.2	0.2	0.0	0.0	0.0

0.2

Note: Queue reported is the number of cars per lane.

7.7

A

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	42	0	0	40	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	42	0	0	40	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	82	82	42
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	925	812	1035
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	925	812	1035
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	67	0	0	67	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	67	0	0	67	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	134	134	67
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	865	761	1002
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	865	761	1002
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

```
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #21 Geyserville Avenue at Private Road
*******************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0   28     0     0   27     0     0    0     0     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0   28     0     0   27     0     0    0     0     0    0     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0   28     0     0   27     0     0    0     0     0    0     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0   42     0     0   40     0     0    0     0     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0   42     0     0   40     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #21 Geyserville Avenue at Private Road
*******************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0   45     0     0   45     0     0    0     0     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0   45     0     0   45     0     0    0     0     0    0     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0   45     0     0   45     0     0    0     0     0    0     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0   67     0     0   67     0     0    0     0     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0   67     0     0   67     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*****************************************************************************
Average Delay (sec/veh):     32.9      Worst Case Level Of Service: F[120.6]
*****************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    19    0   186     0  454     9   250   96     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    19    0   186     0  454     9   250   96     0
Added Vol:      0    0     0    66    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    85    0   186     0  454     9   250   96     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   126    0   276     0  674    13   371  143     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   126    0   276     0  674    13   371  143     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1567 1573   143  xxxx xxxx xxxxx   688 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   124  111   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    85   66   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  1.49 0.00  0.30  xxxx xxxx  xxxx  0.41 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.3  xxxx xxxx xxxxx   2.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  10.7 xxxxx xxxx xxxxx  11.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     B    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 361.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           120.6            xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*****************************************************************************
Average Delay (sec/veh):      8.9      Worst Case Level Of Service: C[ 21.8]
*****************************************************************************
Approach:     North Bound     South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    15    1   280     0  414    15    79  130     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    15    1   280     0  414    15    79  130     0
Added Vol:      0    0     0    84    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    99    1   280     0  414    15    79  130     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   147    1   416     0  615    22   117  193     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   147    1   416     0  615    22   117  193     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1054 1065   193  xxxx xxxx xxxxx   637 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   252  224   854  xxxx xxxx xxxxx   956 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   229  197   854  xxxx xxxx xxxxx   956 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.64 0.01  0.49  xxxx xxxx  xxxx  0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   2.7  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  13.2 xxxxx xxxx xxxxx   9.3 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   228 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   4.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  46.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     E    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            21.8            xxxxxx           xxxxxx
ApproachLOS:        *                C                *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
********************************************************************************
Average Delay (sec/veh):      4.7       Worst Case Level Of Service: C[ 16.8]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include           Include           Include
Lanes:        0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        5    2   137     0    0     0   254  224     0     0  342    19
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     5    2   137     0    0     0   254  224     0     0  342    19
Added Vol:       0    0     0     0    0     0     0   66     0     0    0    84
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     5    2   137     0    0     0   254  290     0     0  342   103
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      7    3   204     0    0     0   377  431     0     0  508   153
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     7    3   204     0    0     0   377  431     0     0  508   153
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1770 1847   431  xxxx xxxx xxxxx   661 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:   93   76   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     64   45   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.12 0.07  0.32  xxxx xxxx  xxxx  0.40 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   1.4  xxxx xxxx xxxxx   2.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  13.4 xxxxx xxxx xxxxx  11.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     B     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:   57 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 81.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      16.8          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        C              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
********************************************************************************
Average Delay (sec/veh):      5.4       Worst Case Level Of Service: C[ 16.7]
********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include           Include           Include
Lanes:        0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        9    0   196     0    0     0   250  169     0     0  357    18
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     9    0   196     0    0     0   250  169     0     0  357    18
Added Vol:       0    0     0     0    0     0     0   84     0     0    0    66
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     9    0   196     0    0     0   250  253     0     0  357    84
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     13    0   291     0    0     0   371  376     0     0  530   125
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    13    0   291     0    0     0   371  376     0     0  530   125
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1711 1774   376  xxxx xxxx xxxxx   655 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  101   84   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     70   51   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.19 0.00  0.43  xxxx xxxx  xxxx  0.39 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   2.2  xxxx xxxx xxxxx   1.9 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.3 xxxxx xxxx xxxxx  11.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     B     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:   70 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 68.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      16.7          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        C              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #31 Geyserville Avenue at Highway 128
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.296
Loss Time (sec):        0 (Y+R=4.0 sec)  Average Delay (sec/veh):         9.1
Optimal Cycle:          0                Level Of Service:                  A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  0  1  0    0  1  0  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0   48    73    69   80     0     0    0     0    79    0    55
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   48    73    69   80     0     0    0     0    79    0    55
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   48    73    69   80     0     0    0     0    79    0    55
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   71   108   103  119     0     0    0     0   117    0    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0   71   108   103  119     0     0    0     0   117    0    82
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0   71   108   103  119     0     0    0     0   117    0    82
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.40  0.60  0.46 0.54  0.00  0.00 0.00  0.00  0.59 0.00  0.41
Final Sat.:     0  321   489   346  402     0     0    0     0   434    0   302
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     xxxx 0.22  0.22  0.30 0.30  xxxx  xxxx xxxx  xxxx  0.27 xxxx  0.27
Crit Moves:       ****             ****                    ****
Delay/Veh:    0.0  8.4   8.4   9.5  9.5   0.0   0.0  0.0   0.0   9.2  0.0   9.2
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  8.4   8.4   9.5  9.5   0.0   0.0  0.0   0.0   9.2  0.0   9.2
LOS by Move:    *    A     A     A    A     *     *    *     *     A    *     A
ApproachDel:       8.4              9.5            xxxxxx              9.2
Delay Adj:        1.00             1.00             xxxxx             1.00
ApprAdjDel:        8.4              9.5            xxxxxx              9.2
LOS by Appr:         A                A                 *                A
AllWayAvgQ:   0.3  0.3   0.3   0.4  0.4   0.4   0.0  0.0   0.0   0.3  0.3   0.3
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #31 Geyserville Avenue at Highway 128
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.438
Loss Time (sec):        0 (Y+R=4.0 sec)  Average Delay (sec/veh):        10.2
Optimal Cycle:          0                Level Of Service:                  B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  0  1  0    0  1  0  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0   77    76    55   67     0     0    0     0   112    0   107
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   77    76    55   67     0     0    0     0   112    0   107
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   77    76    55   67     0     0    0     0   112    0   107
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  114   113    82  100     0     0    0     0   166    0   159
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  114   113    82  100     0     0    0     0   166    0   159
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  114   113    82  100     0     0    0     0   166    0   159
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 0.50  0.50  0.45 0.55  0.00  0.00 0.00  0.00  0.51 0.00  0.49
Final Sat.:     0  373   368   306  373     0     0    0     0   380    0   363
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     xxxx 0.31  0.31  0.27 0.27  xxxx  xxxx xxxx  xxxx  0.44 xxxx  0.44
Crit Moves:       ****             ****
Delay/Veh:    0.0  9.5   9.5   9.7  9.7   0.0   0.0  0.0   0.0  10.9  0.0  10.9
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  9.5   9.5   9.7  9.7   0.0   0.0  0.0   0.0  10.9  0.0  10.9
LOS by Move:    *    A     A     A    A     *     *    *     *     B    *     B
ApproachDel:       9.5              9.7            xxxxxx             10.9
Delay Adj:        1.00             1.00             xxxxx             1.00
ApprAdjDel:        9.5              9.7            xxxxxx             10.9
LOS by Appr:         A                A                 *                B
AllWayAvgQ:   0.4  0.4   0.4   0.3  0.3   0.3   0.0  0.0   0.0   0.7  0.7   0.7
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #32 River Road/Moody Lane/State Route 128
***************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.204
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):        7.9
Optimal Cycle:        0              Level Of Service:                 A
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:   0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  0  1!  0  0   0  0  1!  0  0   0  0  1!  0  0   0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      64    2     2     5    3    33    15   25    82     7   21     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   64    2     2     5    3    33    15   25    82     7   21     3
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   64    2     2     5    3    33    15   25    82     7   21     3
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    95    3     3     7    4    49    22   37   122    10   31     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95    3     3     7    4    49    22   37   122    10   31     4
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   95    3     3     7    4    49    22   37   122    10   31     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.94 0.03  0.03  0.12 0.07  0.81  0.12 0.20  0.68  0.22 0.68  0.10
Final Sat.:   706   22    22   103   62   682   109  182   596   177  530    76
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.13  0.13  0.07 0.07  0.07  0.20 0.20  0.20  0.06 0.06  0.06
Crit Moves:  ****             ****             ****             ****
Delay/Veh:    8.3  8.3   8.3   7.3  7.3   7.3   7.9  7.9   7.9   7.7  7.7   7.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   8.3  8.3   8.3   7.3  7.3   7.3   7.9  7.9   7.9   7.7  7.7   7.7
LOS by Move:    A    A     A     A    A     A     A    A     A     A    A     A
ApproachDel:       8.3              7.3              7.9              7.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        8.3              7.3              7.9              7.7
LOS by Appr:        A                A                A                A
AllWayAvgQ:   0.1  0.1   0.1   0.1  0.1   0.1   0.2  0.2   0.2   0.1  0.1   0.1
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #32 River Road/Moody Lane/State Route 128
***************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.352
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):        9.2
Optimal Cycle:        0              Level Of Service:                 A
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:   0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  0  1!  0  0   0  0  0  1  0   0  0  1!  0  0   0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:     165    5     4     0    2    33    27   19    89     3   40     2
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  165    5     4     0    2    33    27   19    89     3   40     2
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  165    5     4     0    2    33    27   19    89     3   40     2
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   245    7     6     0    3    49    40   28   132     4   59     3
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  245    7     6     0    3    49    40   28   132     4   59     3
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  245    7     6     0    3    49    40   28   132     4   59     3
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.95 0.03  0.02  0.00 0.06  0.94  0.20 0.14  0.66  0.07 0.89  0.04
Final Sat.:   696   21    17     0   45   743   157  110   516    46  618    31
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.35 0.35  0.35  xxxx 0.07  0.07  0.26 0.26  0.26  0.10 0.10  0.10
Crit Moves:       ****             ****      ****                         ****
Delay/Veh:   10.1 10.1  10.1   0.0  7.5   7.5   8.7  8.7   8.7   8.3  8.3   8.3
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  10.1 10.1  10.1   0.0  7.5   7.5   8.7  8.7   8.7   8.3  8.3   8.3
LOS by Move:    B    B     B     *    A     A     A    A     A     A    A     A
ApproachDel:      10.1              7.5              8.7              8.3
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.1              7.5              8.7              8.3
LOS by Appr:        B                A                A                A
AllWayAvgQ:   0.5  0.5   0.5   0.1  0.1   0.1   0.3  0.3   0.3   0.1  0.1   0.1
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

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-----------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*****************************************************************************
Average Delay (sec/veh):      3.3      Worst Case Level Of Service: B[ 13.5]
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   1  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0    0   104    0    0     4  116    0     0  132   77
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0   104    0    0     4  116    0     0  132   77
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0   104    0    0     4  116    0     0  132   77
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0   154    0    0     6  172    0     0  196  114
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0   154    0    0     6  172    0     0  196  114
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   437 xxxx xxxxx   310 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   580 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   578 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.27 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   1.1 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  13.5 xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     B    *    *     A    *    *     *    *    *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     A    *    *     *    *    *
ApproachDel:      xxxxxx           13.5           xxxxxx           xxxxxx
ApproachLOS:        *                B               *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



```
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*****************************************************************************
Average Delay (sec/veh):      2.5      Worst Case Level Of Service: C[ 16.3]
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0    0    82    0    5     5   92    0     0  250  158
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0    82    0    5     5   92    0     0  250  158
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0    0    0    82    0    5     5   92    0     0  250  158
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0    0    0   122    0    7     7  137    0     0  371  235
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0    0    0   122    0    7     7  137    0     0  371  235
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   640  640   489   606 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   443  396   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   440  393   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.28 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     A    *    *     *    *    *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  446 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  1.2 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 16.3 xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    C    *     A    *    *     *    *    *
ApproachDel:      xxxxxx           16.3           xxxxxx           xxxxxx
ApproachLOS:        *                C               *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```

Scenario:	AM Peak Hour 4
Command:	AM Peak Hour 4
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 4
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 4

Scenario Report

Scenario Report

Scenario:	PM Peak Hour 4
Command:	PM Peak Hour 4
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 4
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 4

Trip Generation Report

Forecast for AM Peak Hour 4

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
4	Route 4	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
Zone 4 Subtotal						84	66	150	100.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 4

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
4	Route 4	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 4 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone

To Gates

2	100.0
3	100.0
4	100.0
1	100.0
5	100.0
678	

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1

2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

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Turning Movement Report
AM Peak Hour 4

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	94	66	10	0	23	9	73	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	14	84	100	0	0	0	8	116	0	0	78	72	472
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84

Turning Movement Report
PM Peak Hour 4

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	118	153	0	84	0	0	0	421
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	6	0	214	0	0	0	2	23	0	0	183	1	429
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	20	0	8	0	23	6	186	23	0	266
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	185	168	0	66	0	0	0	503
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	8	0	208	0	0	0	7	26	0	0	266	3	518
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	4	0	4	0	27	2	254	37	0	328
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

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Link Volume Report
AM Peak Hour 4

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	148	148	170	0	170	32	35	67	98	117	215	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	198	0	198	0	164	164	124	92	216	150	216	366	944
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168

Link Volume Report
PM Peak Hour 4

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	118	153	271	237	184	421	0	0	0	842
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	220	0	220	0	3	3	25	189	214	184	237	421	858
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	192	192	28	0	28	29	31	60	209	43	252	532
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	185	168	353	234	269	503	0	0	0	1006
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	216	0	216	0	10	10	33	274	307	269	234	503	1036
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	256	256	8	0	8	29	41	70	291	31	322	656
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	11.6	0.000	B	14.0	0.000	+ 2.456 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.4	0.000	B	14.6	0.000	+ 4.183 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	11.7	0.000	B	11.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.3	0.000	B	13.0	0.000	+ 2.631 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.4	0.000	B	10.1	0.000	+ 0.761 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.3	0.000	B	13.5	0.000	+ 2.262 D/V
# 15 Geyserville Avenue at Hamilton	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.200	A	7.7	0.200	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	C	15.9	0.000	F	120.6	0.000	+104.613 D/V
# 24 Highway 101 nb ramp at Healdsb	B	14.3	0.000	C	16.8	0.000	+ 2.473 D/V
# 31 Geyserville Avenue at Highway	A	9.1	0.296	A	9.1	0.296	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.9	0.204	A	7.9	0.204	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.5	0.000	B	13.5	0.000	+ 0.000 D/V

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 4 Highway 101 sb at Lytton Sprin	C	15.6	0.000	D	27.2	0.000	+11.512 D/V
# 5 Highway 101 nb at Lytton Sprin	B	11.4	0.000	C	16.2	0.000	+ 4.851 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	12.0	0.000	B	12.0	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.5	0.000	B	14.2	0.000	+ 3.629 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.6	0.000	B	10.2	0.000	+ 0.657 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.4	0.000	B	14.1	0.000	+ 2.685 D/V
# 15 Geyserville Avenue at Hamilton	B	11.0	0.000	B	11.0	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	8.1	0.227	A	8.1	0.227	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	13.7	0.000	C	21.8	0.000	+ 8.141 D/V
# 24 Highway 101 nb ramp at Healdsb	B	13.8	0.000	C	16.7	0.000	+ 2.857 D/V
# 31 Geyserville Avenue at Highway	B	10.2	0.438	B	10.2	0.438	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	9.2	0.352	A	9.2	0.352	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	C	16.3	0.000	C	16.3	0.000	+ 0.000 D/V

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	68	0	5	0	43	38	148	26	0
ApproachDel:	xxxxxx			15.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 43 38	148 26 0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                      Peak Hour Delay Signal Warrant Report
*********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
Initial Vol:   14    0  100      0    0    0      8  116    0      0   78   72
ApproachDel:      10.4            xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
---------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



```
---------------------------------------------------------------------------------
                      Peak Hour Delay Signal Warrant Report
*********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  0  0  0    0  1  0  0  0    0  0  0  1  0
Initial Vol:   40    0   95      0    0    0     17   90    0      0  140   98
ApproachDel:      11.4            xxxxxx           xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
---------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	17 90 0	0 140 98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	135 0 0	0 0 15	21 0 185	0 0 0
ApproachDel:	xxxxxx	xxxxxx	11.7	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	214 0 0	0 0 24	18 0 170	0 0 0
ApproachDel:	xxxxxx	xxxxxx	12.0	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
Peak Hour Volume Signal Warrant Report [Urban]
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:        1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
Initial Vol:  135    0     0    0    0    15    21    0   185     0    0     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            150
Minor Approach Volume:          206
Minor Approach Volume Threshold: 725
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.


```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
Peak Hour Volume Signal Warrant Report [Urban]
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:        1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
Initial Vol:  214    0     0    0    0    24    18    0   170     0    0     0
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            238
Minor Approach Volume:          188
Minor Approach Volume Threshold: 602
-----------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.3			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=153]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=271]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.5			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.5]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=168]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=353]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1
ApproachDel:	9.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 20 0	0 182 3
ApproachDel:	9.6	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 20 0	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0
ApproachDel:	xxxxxx	11.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 27 2	170 37 0
ApproachDel:	xxxxxx	11.4	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 21 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.4

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=20]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=291]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	11.0

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=20]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=373]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0    0  0  1! 0  0    0  0  0  1  0    0  1  0  0  0
Initial Vol:    0    0    0     75    0    6      0   22   31     17   48    0
ApproachDel:     xxxxxx           10.2            xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```



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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  0    0  0  1! 0  0    0  0  0  1  0    0  1  0  0  0
Initial Vol:    0    0    0     36    0    4      0   51   53     16   62    0
ApproachDel:     xxxxxx           10.3            xxxxxx           xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
-------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33
ApproachDel:	10.0			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	28	3	58	0	0	0	0	75	24	0	44	80
ApproachDel:	10.2			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	28	3	58	0	0	0	24	75	0	0	44	80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	55 6 0	0 11 16	22 0 105	0 0 0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	93 28 0	0 18 27	17 0 84	0 0 0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0		0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0
ApproachDel:	xxxxxx	15.9	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0
ApproachDel:	xxxxxx	13.7	xxxxxx	xxxxxx

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=1.1]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19
ApproachDel:	14.3			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	9	0	196	0	0	0	250	1160	0	0	357	18
ApproachDel:	13.8			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.8]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 169 0	0 357 18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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```
AM Peak Hour 4           Mon Dec 29, 2008 05:36:06              Page 8-28
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
*******************************************************************************
Intersection #31 Geyserville Avenue at Highway 128
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Peak Hour Volume Signal Warrant Report [Urban]
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Lanes:       0  0  0  1  0   0  1  0  0  0   0  0  0  0  0   0  0  1! 0  0
Initial Vol:    0   48    73    69   80     0     0    0     0    79    0    55
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            270
Minor Approach Volume:          134
Minor Approach Volume Threshold: 569
-------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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```
PM Peak Hour 4           Mon Dec 29, 2008 05:36:17              Page 8-28
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                Peak Hour Volume Signal Warrant Report [Urban]
*******************************************************************************
Intersection #31 Geyserville Avenue at Highway 128
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Lanes:       0  0  0  1  0   0  1  0  0  0   0  0  0  0  0   0  0  1! 0  0
Initial Vol:    0   77    76    55   67     0     0    0     0   112    0   107
------------|---------------||---------------||---------------||---------------|
Major Street Volume:            275
Minor Approach Volume:          219
Minor Approach Volume Threshold: 564
-------------------------------------------------------------------------------
```

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	64	2	2	5	3	33	15	25	82	7	21	3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Initial Vol:	165	5	4	0	2	33	27	19	89	3	40	2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			1 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	104	0	0	4	116	0	0	132	77
ApproachDel:	xxxxxx			13.5			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	82	0	5	5	92	0	0	250	158
ApproachDel:	xxxxxx			16.3			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0		0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	0 1 0 90 0 0 5	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
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                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      9.8      Worst Case Level Of Service: B[ 14.0]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:      0    0     0    94    0    10     0   23     9    73   25     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0    94    0    10     0   23     9    73   25     0
Added Vol:     0    0     0     0   66     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0    94   66    10     0   23     9    73   25     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0   140   98    15     0   34    13   108   37     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0   140   98    15     0   34    13   108   37     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   295  302    37  xxxx xxxx xxxxx    48 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   700  614  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   661  569  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.21 0.17  0.01  xxxx xxxx  xxxx  0.07 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.5 xxxx xxxxx
LOS by Move:   *    *     *     *    *     A     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   620 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   1.8 xxxx xxxxx xxxxx xxxx xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  14.4 xxxx xxxxx xxxxx xxxx xxxxx   7.5 xxxx xxxxx
Shared LOS:    *    *     *     B    *     *     *    *     *     A    *     *
ApproachDel:    xxxxxx            14.0            xxxxxx           xxxxxx
ApproachLOS:       *                B                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):     13.2      Worst Case Level Of Service: D[ 27.2]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0    0     0    68    0     5     0   43    38   148   26     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0    68    0     5     0   43    38   148   26     0
Added Vol:     0    0     0     0   84     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0    68   84     5     0   43    38   148   26     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0   101  125     7     0   64    56   220   39     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0   101  125     7     0   64    56   220   39     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   570  599    39  xxxx xxxx xxxxx   120 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   486  418  1039  xxxx xxxx xxxxx  1480 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   423  347  1039  xxxx xxxx xxxxx  1480 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.24 0.36  0.01  xxxx xxxx  xxxx  0.15 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx   0.5 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx   7.9 xxxx xxxxx
LOS by Move:   *    *     *     *    *     A     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   377 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   3.7 xxxx xxxxx xxxxx xxxx xxxxx   0.5 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  27.8 xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx
Shared LOS:    *    *     *     D    *     *     *    *     *     A    *     *
ApproachDel:    xxxxxx            27.2            xxxxxx           xxxxxx
ApproachLOS:       *                D                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Highway 101 nb at Lytton Springs Road

Average Delay (sec/veh): 6.2 Worst Case Level Of Service: B[14.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	14	0	100	0	0	0	8	116	0	0	78	72
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	14	0	100	0	0	0	8	116	0	0	78	72
Added Vol:	0	84	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	14	84	100	0	0	0	8	116	0	0	78	72
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	21	125	149	0	0	0	12	172	0	0	116	107
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	21	125	149	0	0	0	12	172	0	0	116	107
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	365	419	172	xxxx	xxxx	xxxxx	223	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	638	528	876	xxxx	xxxx	xxxxx	1358	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	634	524	876	xxxx	xxxx	xxxxx	1358	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.03	0.24	0.17	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	668	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	2.3	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	14.6	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	*	*	*
ApproachDel:		14.6			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Highway 101 nb at Lytton Springs Road

Average Delay (sec/veh): 6.2 Worst Case Level Of Service: C[16.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	40	0	95	0	0	0	17	93	0	0	140	98
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	40	0	95	0	0	0	17	93	0	0	140	98
Added Vol:	0	66	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	40	66	95	0	0	0	17	93	0	0	140	98
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	59	98	141	0	0	0	25	138	0	0	208	146
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	59	98	141	0	0	0	25	138	0	0	208	146
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	469	542	138	xxxx	xxxx	xxxxx	354	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	556	450	916	xxxx	xxxx	xxxxx	1216	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	547	441	916	xxxx	xxxx	xxxxx	1216	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.11	0.22	0.15	xxxx	xxxx	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	615	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	2.7	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	16.2	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	A	*	*	*	*	*
ApproachDel:		16.2			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		C			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: B[11.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1	0	0	0 0	0	0 1	0	0	1! 0 0	0	0 0	0 0
Volume Module:												
Base Vol:	135	0	0	0	0	15	21	0	185	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	135	0	0	0	0	15	21	0	185	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	0	0	0	0	15	21	0	185	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	201	0	0	0	0	22	31	0	275	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	201	0	0	0	0	22	31	0	275	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	22	xxxx	xxxxx	xxxx	xxxx	xxxxx	401	401	0	xxxx	xxxx	xxxxx
Potent Cap.:	1606	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	541	900	xxxx	xxxx	xxxxx
Move Cap.:	1606	xxxx	xxxxx	xxxx	xxxx	xxxxx	551	473	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.12	xxxx	xxxx	xxxx	xxxx	xxxx	0.06	0.00	0.31	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	845	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.7	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.7	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.7			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Average Delay (sec/veh): 9.2 Worst Case Level Of Service: B[12.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1	0	0 0	0	0	0 0 1	0	0	1! 0 0	0	0 0	0 0
Volume Module:												
Base Vol:	214	0	0	0	0	24	18	0	170	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	214	0	0	0	0	24	18	0	170	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	214	0	0	0	0	24	18	0	170	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	318	0	0	0	0	36	27	0	253	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	318	0	0	0	0	36	27	0	253	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	36	xxxx	xxxxx	xxxx	xxxx	xxxxx	636	636	0	xxxx	xxxx	xxxxx
Potent Cap.:	1588	xxxx	xxxxx	xxxx	xxxx	xxxxx	445	398	900	xxxx	xxxx	xxxxx
Move Cap.:	1588	xxxx	xxxxx	xxxx	xxxx	xxxxx	377	318	900	xxxx	xxxx	xxxxx
Volume/Cap:	0.20	xxxx	xxxx	xxxx	xxxx	xxxx	0.07	0.00	0.28	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	794	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.6	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.0	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			12.0			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Average Delay (sec/veh):      8.5      Worst Case Level Of Service: B[ 13.0]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    0    0   118   153    0     0    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0    0    0   118   153    0     0    0    0     0
Added Vol:     66    0     0    0    0     0     0    0    84    0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0    0    0     0
Initial Fut:   66    0     0    0    0   118   153    0    84    0    0     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31  1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:    98    0     0    0    0   175   227    0   125    0    0     0
Reduct Vol:     0    0     0    0    0     0     0    0     0    0    0     0
FinalVolume:   98    0     0    0    0   175   227    0   125    0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  175 xxxx xxxxx  xxxx xxxx xxxxx   196  196     0  xxxx xxxx xxxxx
Potent Cap.: 1413 xxxx xxxxx  xxxx xxxx xxxxx   797  703   900  xxxx xxxx xxxxx
Move Cap.:   1413 xxxx xxxxx  xxxx xxxx xxxxx   755  654   900  xxxx xxxx xxxxx
Volume/Cap:  0.07 xxxx  xxxx  xxxx xxxx  xxxx  0.30 0.00  0.14  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *    *    *     *     *    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  801 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  2.3 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.0 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *    *    *     *     *    B     *    *    *     *
ApproachDel:     xxxxxx           xxxxxx            13.0            xxxxxx
ApproachLOS:        *                *                B                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
*******************************************************************************
Average Delay (sec/veh):      7.9      Worst Case Level Of Service: B[ 14.2]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    0    0   185   168    0     0    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0    0    0   185   168    0     0    0    0     0
Added Vol:     84    0     0    0    0     0     0    0    66    0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0    0    0     0
Initial Fut:   84    0     0    0    0   185   168    0    66    0    0     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31  1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:   125    0     0    0    0   275   250    0    98    0    0     0
Reduct Vol:     0    0     0    0    0     0     0    0     0    0    0     0
FinalVolume:  125    0     0    0    0   275   250    0    98    0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  275 xxxx xxxxx  xxxx xxxx xxxxx   250  250     0  xxxx xxxx xxxxx
Potent Cap.: 1300 xxxx xxxxx  xxxx xxxx xxxxx   743  657   900  xxxx xxxx xxxxx
Move Cap.:   1300 xxxx xxxxx  xxxx xxxx xxxxx   689  594   900  xxxx xxxx xxxxx
Volume/Cap:  0.10 xxxx  xxxx  xxxx xxxx  xxxx  0.36 0.00  0.11  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *    *    *     *     *    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  738 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  2.5 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 14.2 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *    *    *     *     *    B     *    *    *     *
ApproachDel:     xxxxxx           xxxxxx            14.2            xxxxxx
ApproachLOS:        *                *                B                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Average Delay (sec/veh): 5.2 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	6	0	130	0	0	0	2	23	0	0	117	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	0	130	0	0	0	2	23	0	0	117	1
Added Vol:	0	0	84	0	0	0	0	0	0	0	66	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	0	214	0	0	0	2	23	0	0	183	1
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	9	0	318	0	0	0	3	34	0	0	272	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	0	318	0	0	0	3	34	0	0	272	1
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	313	313	34	xxxx	xxxx	xxxxx	273	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	684	605	1045	xxxx	xxxx	xxxxx	1302	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	683	604	1045	xxxx	xxxx	xxxxx	1302	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.30	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	1030	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.4	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.1	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	*	*	*
ApproachDel:		10.1			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Average Delay (sec/veh): 4.4 Worst Case Level Of Service: B[10.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Volume Module: >> Count Date: 17 May 2007 <<												
Base Vol:	8	0	142	0	0	0	7	26	0	0	182	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	0	142	0	0	0	7	26	0	0	182	3
Added Vol:	0	0	66	0	0	0	0	0	0	0	84	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	0	208	0	0	0	7	26	0	0	266	3
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	12	0	309	0	0	0	10	39	0	0	395	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	12	0	309	0	0	0	10	39	0	0	395	4
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	457	459	39	xxxx	xxxx	xxxxx	400	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	565	502	1039	xxxx	xxxx	xxxxx	1170	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	562	497	1039	xxxx	xxxx	xxxxx	1170	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.02	0.00	0.30	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	1007	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.4	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.2	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	*	*	*
ApproachDel:		10.2			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      6.9      Worst Case Level Of Service: B[ 13.5]
*******************************************************************************
Approach:     North Bound    South Bound    East Bound     West Bound
Movement:    L - T - R   L - T - R   L - T - R   L - T - R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include         Include         Include         Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       0    0     0    20    0     8     0   23     6   120   23     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0     8     0   23     6   120   23     0
Added Vol:      0    0     0     0    0     0     0    0     0    66    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    20    0     8     0   23     6   186   23     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0    30    0    12     0   34     9   276   34     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    30    0    12     0   34     9   276   34     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   625  630    34  xxxx xxxx xxxxx    43 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   452  401  1045  xxxx xxxx xxxxx  1579 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   380  318  1045  xxxx xxxx xxxxx  1579 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.08 0.00  0.01  xxxx xxxx  xxxx  0.18 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.6 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  464 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.6 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 13.5 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx           13.5            xxxxxx          xxxxxx
ApproachLOS:       *                B                *               *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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-------------------------------------------------------------------------------
                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #14 Highway 101 sb ramp at Geyserville Avenue
*******************************************************************************
Average Delay (sec/veh):      6.5      Worst Case Level Of Service: B[ 14.1]
*******************************************************************************
Approach:     North Bound    South Bound    East Bound     West Bound
Movement:    L - T - R   L - T - R   L - T - R   L - T - R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:         Include         Include         Include         Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0     4    0     4     0   27     2   170   37     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     4    0     4     0   27     2   170   37     0
Added Vol:      0    0     0     0    0     0     0    0     0    84    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     4    0     4     0   27     2   254   37     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     6    0     6     0   40     3   377   55     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     6    0     6     0   40     3   377   55     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   851  853    55  xxxx xxxx xxxxx    43 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   333  299  1018  xxxx xxxx xxxxx  1579 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   255  208  1018  xxxx xxxx xxxxx  1579 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.02 0.00  0.01  xxxx xxxx  xxxx  0.24 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.9 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  408 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx   0.9 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 14.1 xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx
Shared LOS:     *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx           14.1            xxxxxx          xxxxxx
ApproachLOS:       *                B                *               *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
********************************************************************************
Average Delay (sec/veh):      0.7       Worst Case Level Of Service: B[ 10.4]
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  153     0     0  118     0     0    0     0    10    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  153     0     0  118     0     0    0     0    10    0    10
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  153     0     0  118     0     0    0     0    10    0    10
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  227     0     0  175     0     0    0     0    15    0    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  227     0     0  175     0     0    0     0    15    0    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   403  403   227
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540   817
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540   817
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  697 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.4 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx             10.4
ApproachLOS:        *                *                *                 B
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
********************************************************************************
Average Delay (sec/veh):      0.6       Worst Case Level Of Service: B[ 11.0]
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  168     0     0  185     0     0    0     0    10    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  168     0     0  185     0     0    0     0    10    0    10
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  168     0     0  185     0     0    0     0    10    0    10
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0  250     0     0  275     0     0    0     0    15    0    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  250     0     0  275     0     0    0     0    15    0    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   524  524   250
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   517  461   794
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   517  461   794
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.03 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  626 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.0 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx             11.0
ApproachLOS:        *                *                *                 B
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):     4.8      Worst Case Level Of Service: B[ 10.2]
***************************************************************************
Approach:      North Bound    South Bound     East Bound      West Bound
Movement:     L  -  T  -  R  L  -  T  -  R  L  -  T  -  R  L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign      Stop Sign     Uncontrolled    Uncontrolled
Rights:          Include        Include        Include         Include
Lanes:        0  0  0  0  0  0  0  1!  0  0  0  0  0  1  0  0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      0    0     0    75    0     6     0   22    31    17   48     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0    75    0     6     0   22    31    17   48     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0    75    0     6     0   22    31    17   48     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0   111    0     9     0   33    46    25   71     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0   111    0     9     0   33    46    25   71     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   178  201    71  xxxx xxxx xxxxx    79 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   817  699   997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   806  687   997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.14 0.00  0.01  xxxx xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  818 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
Shared LOS:    *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx          10.2           xxxxxx          xxxxxx
ApproachLOS:        *              B               *               *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):     2.3      Worst Case Level Of Service: B[ 10.3]
***************************************************************************
Approach:      North Bound    South Bound     East Bound      West Bound
Movement:     L  -  T  -  R  L  -  T  -  R  L  -  T  -  R  L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign      Stop Sign     Uncontrolled    Uncontrolled
Rights:          Include        Include        Include         Include
Lanes:        0  0  0  0  0  0  0  1!  0  0  0  0  0  1  0  0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0    0     0    36    0     4     0   58    53    16   62     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0    36    0     4     0   58    53    16   62     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0    36    0     4     0   58    53    16   62     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0    53    0     6     0   86    79    24   92     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0    53    0     6     0   86    79    24   92     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   265  305    92  xxxx xxxx xxxxx   165 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   728  612   971  xxxx xxxx xxxxx  1426 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   719  602   971  xxxx xxxx xxxxx  1426 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.07 0.00  0.01  xxxx xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  738 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:    *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx          10.3           xxxxxx          xxxxxx
ApproachLOS:        *              B               *               *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

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---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):      3.1      Worst Case Level Of Service: A[ 10.0]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   29    0    40     0    0     0    13   93     0     0   42    33
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    43    0    59     0    0     0    19  138     0     0   62    49
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   43    0    59     0    0     0    19  138     0     0   62    49
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  264  288   138  xxxx xxxx xxxxx   111 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  730  625   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    722  617   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.00  0.06  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  823 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.0 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:       10.0          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A              *                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):      3.5      Worst Case Level Of Service: B[ 10.2]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   28    3    58     0    0     0    24   75     0     0   44    80
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    42    4    86     0    0     0    36  111     0     0   65   119
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   42    4    86     0    0     0    36  111     0     0   65   119
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  308  367   111  xxxx xxxx xxxxx   184 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  689  565   947  xxxx xxxx xxxxx  1403 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    675  550   947  xxxx xxxx xxxxx  1403 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.01  0.09  xxxx xxxx  xxxx  0.03 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  823 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:       10.2          xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B              *                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.200
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.7
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0	
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	82	9	0	0	16	24	33	0	156	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	9	0	0	16	24	33	0	156	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	82	9	0	0	16	24	33	0	156	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	0.01	0.82	0.00	0.00	0.00
Final Sat.:	700	76	0	0	350	509	163	0	780	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	xxxx	xxxx	0.05	0.05	0.20	0.00	0.20	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:		8.0			7.2			7.6			xxxxxx	
Delay Adj:		1.00			1.00			1.00			xxxxx	
ApprAdjDel:		8.0			7.2			7.6			xxxxxx	
LOS by Appr:		A			A			A			*	
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.227
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.1
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0	
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	28	0	0	18	27	17	0	84	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	138	42	0	0	27	40	25	0	125	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	42	0	0	27	40	25	0	125	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	42	0	0	27	40	25	0	125	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.16	0.01	0.83	0.00	0.00	0.00
Final Sat.:	610	184	0	0	343	515	146	0	722	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	xxxx	xxxx	0.08	0.08	0.17	0.00	0.17	xxxx	xxxx	xxxx
Crit Moves:	****					****	****					
Delay/Veh:	8.7	8.7	0.0	0.0	7.4	7.4	7.7	7.7	7.7	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.7	8.7	0.0	0.0	7.4	7.4	7.7	7.7	7.7	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:		8.7			7.4			7.7			xxxxxx	
Delay Adj:		1.00			1.00			1.00			xxxxx	
ApprAdjDel:		8.7			7.4			7.7			xxxxxx	
LOS by Appr:		A			A			A			*	
AllWayAvgQ:	0.3	0.3	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	42	0	0	40	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	42	0	0	40	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	82	82	42
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	925	812	1035
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	925	812	1035
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		xxxxxx			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		*			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #20 Geyserville Avevnue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1	0 0	0 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	67	0	0	67	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	67	0	0	67	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	134	134	67
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	865	761	1002
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	865	761	1002
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		xxxxxx			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		*			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	0	28	0	0	27	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	28	0	0	27	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	28	0	0	27	0	0	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	42	0	0	40	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	42	0	0	40	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #21 Geyserville Avenue at Private Road

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	0	45	0	0	45	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	45	0	0	45	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	45	0	0	45	0	0	0	0	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	67	0	0	67	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	67	0	0	67	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------

                    Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):     32.9      Worst Case Level Of Service: F[120.6]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0   19    0   186     0  454     9   250   96     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   19    0   186     0  454     9   250   96     0
Added Vol:      0    0     0   66    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   85    0   186     0  454     9   250   96     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0  126    0   276     0  674    13   371  143     0
Reduct Vol:     0    0     0    0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0  126    0   276     0  674    13   371  143     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1567 1573   143  xxxx xxxx xxxxx   688 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   124  111   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    85   66   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  1.49 0.00  0.30  xxxx xxxx  xxxx  0.41 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.3  xxxx xxxx xxxxx   2.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  10.7 xxxxx xxxx xxxxx  11.6 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     B    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 361.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           120.6            xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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                    Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
*******************************************************************************
Average Delay (sec/veh):      8.9      Worst Case Level Of Service: C[ 21.8]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0   15    1   280     0  414    15    79  130     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   15    1   280     0  414    15    79  130     0
Added Vol:      0    0     0   84    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   99    1   280     0  414    15    79  130     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0  147    1   416     0  615    22   117  193     0
Reduct Vol:     0    0     0    0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0  147    1   416     0  615    22   117  193     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1054 1065   193  xxxx xxxx xxxxx   637 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   252  224   854  xxxx xxxx xxxxx   956 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   229  197   854  xxxx xxxx xxxxx   956 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.64 0.01  0.49  xxxx xxxx  xxxx  0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   2.7  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  13.2 xxxxx xxxx xxxxx   9.3 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   228 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   4.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  46.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     E    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            21.8            xxxxxx           xxxxxx
ApproachLOS:        *                C                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      4.7      Worst Case Level Of Service: C[ 16.8]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        5    2   137     0    0     0   254  224     0     0  342    19
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     5    2   137     0    0     0   254  224     0     0  342    19
Added Vol:       0    0     0     0    0     0     0   66     0     0    0    84
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     5    2   137     0    0     0   254  290     0     0  342   103
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      7    3   204     0    0     0   377  431     0     0  508   153
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     7    3   204     0    0     0   377  431     0     0  508   153
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1770 1847   431  xxxx xxxx xxxxx   661 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:   93   76   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     64   45   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.12 0.07  0.32  xxxx xxxx  xxxx  0.40 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   1.4  xxxx xxxx xxxxx   2.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  13.4 xxxxx xxxx xxxxx  11.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     B     *    *     *     B    *     *     *    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:    57 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:   0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  81.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        16.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          C               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      5.4      Worst Case Level Of Service: C[ 16.7]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        9    0   196     0    0     0   250  169     0     0  357    18
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     9    0   196     0    0     0   250  169     0     0  357    18
Added Vol:       0    0     0     0    0     0     0   84     0     0    0    66
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     9    0   196     0    0     0   250  253     0     0  357    84
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     13    0   291     0    0     0   371  376     0     0  530   125
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    13    0   291     0    0     0   371  376     0     0  530   125
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1711 1774   376  xxxx xxxx xxxxx   655 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  101   84   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     70   51   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.19 0.00  0.43  xxxx xxxx  xxxx  0.39 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   2.2  xxxx xxxx xxxxx   1.9 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.3 xxxxx xxxx xxxxx  11.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     B     *    *     *     B    *     *     *    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:    70 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:   0.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  68.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        16.7           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          C               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.296
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	9.1
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	71	108	103	119	0	0	0	0	117	0	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	71	108	103	119	0	0	0	0	117	0	82
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	71	108	103	119	0	0	0	0	117	0	82
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	321	489	346	402	0	0	0	0	434	0	302
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.30	0.30	xxxx	xxxx	xxxx	xxxx	0.27	xxxx	0.27
Crit Moves:		****			****					****		
Delay/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	8.4			9.5			xxxxxx			9.2		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	8.4			9.5			xxxxxx			9.2		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.3	0.3	0.3	0.4	0.4	0.4	0.0	0.0	0.0	0.3	0.3	0.3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.438
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	10.2
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	114	113	82	100	0	0	0	0	166	0	159
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	114	113	82	100	0	0	0	0	166	0	159
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	114	113	82	100	0	0	0	0	166	0	159
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	373	368	306	373	0	0	0	0	380	0	363
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.31	0.31	0.27	0.27	xxxx	xxxx	xxxx	xxxx	0.44	xxxx	0.44
Crit Moves:		****			****					****		
Delay/Veh:	0.0	9.5	9.5	9.7	9.7	0.0	0.0	0.0	0.0	10.9	0.0	10.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	9.5	9.5	9.7	9.7	0.0	0.0	0.0	0.0	10.9	0.0	10.9
LOS by Move:	*	A	A	A	A	*	*	*	*	B	*	B
ApproachDel:	9.5			9.7			xxxxxx			10.9		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	9.5			9.7			xxxxxx			10.9		
LOS by Appr:	A			A			*			B		
AllWayAvgQ:	0.4	0.4	0.4	0.3	0.3	0.3	0.0	0.0	0.0	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.204
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	95	3	3	7	4	49	22	37	122	10	31	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	3	3	7	4	49	22	37	122	10	31	4
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	95	3	3	7	4	49	22	37	122	10	31	4
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	706	22	22	103	62	682	109	182	596	177	530	76
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.13	0.07	0.07	0.07	0.20	0.20	0.20	0.06	0.06	0.06
Crit Moves:	****				****			****			****	
Delay/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.3			7.3			7.9			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.3			7.3			7.9			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.352
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 9.2
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33	27	19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	27	19	89	3	40	2
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	245	7	6	0	3	49	40	28	132	4	59	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	245	7	6	0	3	49	40	28	132	4	59	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	245	7	6	0	3	49	40	28	132	4	59	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20	0.14	0.66	0.07	0.89	0.04
Final Sat.:	696	21	17	0	45	743	157	110	516	46	618	31
Capacity Analysis Module:												
Vol/Sat:	0.35	0.35	0.35	xxxx	0.07	0.07	0.26	0.26	0.26	0.10	0.10	0.10
Crit Moves:		****			****		****					****
Delay/Veh:	10.1	10.1	10.1	0.0	7.5	7.5	8.7	8.7	8.7	8.3	8.3	8.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.1	10.1	10.1	0.0	7.5	7.5	8.7	8.7	8.7	8.3	8.3	8.3
LOS by Move:	B	B	B	*	A	A	A	A	A	A	A	A
ApproachDel:		10.1			7.5			8.7			8.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.1			7.5			8.7			8.3	
LOS by Appr:		B			A			A			A	
AllWayAvgQ:	0.5	0.5	0.5	0.1	0.1	0.1	0.3	0.3	0.3	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
************************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
************************************************************************************
Average Delay (sec/veh):      3.3      Worst Case Level Of Service: B[ 13.5]
************************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0    1  0  0  0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0   104    0     0     4  116     0     0  132    77
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   104    0     0     4  116     0     0  132    77
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   104    0     0     4  116     0     0  132    77
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   154    0     0     6  172     0     0  196   114
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   154    0     0     6  172     0     0  196   114
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   437 xxxx xxxxx   310 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   580 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   578 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.27 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   1.1 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  13.5 xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     A    *     *     *    *     *
ApproachDel:    xxxxxx            13.5            xxxxxx           xxxxxx
ApproachLOS:       *                B                *                *
************************************************************************************
Note: Queue reported is the number of cars per lane.
************************************************************************************
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------------------------------------------------------------------------------------
------------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
************************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
************************************************************************************
Average Delay (sec/veh):      2.5      Worst Case Level Of Service: C[ 16.3]
************************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    82    0     5     5   92     0     0  250   158
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    82    0     5     5   92     0     0  250   158
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    82    0     5     5   92     0     0  250   158
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   122    0     7     7  137     0     0  371   235
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   122    0     7     7  137     0     0  371   235
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   640  640   489   606 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   443  396   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   440  393   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.28 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  446 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  1.2 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 16.3 xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    C     *     A    *     *     *    *     *
ApproachDel:    xxxxxx            16.3            xxxxxx           xxxxxx
ApproachLOS:       *                C                *                *
************************************************************************************
Note: Queue reported is the number of cars per lane.
************************************************************************************
```

Scenario:	AM Peak Hour 5
Command:	AM Peak Hour 5
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 5
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 5

Scenario Report

Scenario Report

Scenario:	PM Peak Hour 5
Command:	PM Peak Hour 5
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 5
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 5

Trip Generation Report

Forecast for AM Peak Hour 5

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
5	Route 5	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
Zone 5 Subtotal						84	66	150	100.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 5

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
5	Route 5	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 5 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Turning Movement Report

AM Peak Hour 5

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	94	66	10	0	23	9	73	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	14	84	100	0	0	0	8	116	0	0	78	72	472
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84

Turning Movement Report

PM Peak Hour 5

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	184	237	0	0	0	0	0	421
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	6	0	214	0	0	0	2	23	0	0	183	1	429
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	20	0	8	0	23	6	186	23	0	266
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	84	0	0	0	0	0	0	66	0	0	150
Total	0	153	84	0	118	0	0	0	0	76	0	10	441
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	75	0	6	0	22	31	17	48	0	199
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	0	40	0	0	0	13	93	0	0	42	33	250
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	6	0	0	11	16	22	0	105	0	0	0	215
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	269	234	0	0	0	0	0	503
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	8	0	208	0	0	0	7	26	0	0	266	3	518
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	4	0	4	0	27	2	254	37	0	328
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	66	0	0	0	0	0	0	84	0	0	150
Total	0	168	66	0	185	0	0	0	0	94	0	10	523
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	36	0	4	0	58	53	16	62	0	229
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	3	58	0	0	0	24	75	0	0	44	80	312
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	28	0	0	18	27	17	0	84	0	0	0	267
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	28	0	0	27	0	0	0	0	0	0	0	55
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	45	0	0	45	0	0	0	0	0	0	0	90
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Link Volume Report
AM Peak Hour 5

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	148	148	170	0	170	32	35	67	98	117	215	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	198	0	198	0	164	164	124	92	216	150	216	366	944
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168

Link Volume Report
PM Peak Hour 5

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	184	237	421	237	184	421	0	0	0	842
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	220	0	220	0	3	3	25	189	214	184	237	421	858
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	192	192	28	0	28	29	31	60	209	43	252	532
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	84	66	150	0	0	0	0	0	0	66	84	150	300
Total	237	194	431	118	163	281	0	0	0	86	84	170	882
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	48	81	0	81	53	54	107	65	97	162	398
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	69	0	69	0	46	46	106	71	177	75	133	208	500
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	116	177	27	28	55	127	71	198	0	0	0	430
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	269	234	503	234	269	503	0	0	0	1006
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	216	0	216	0	10	10	33	274	307	269	234	503	1036
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	256	256	8	0	8	29	41	70	291	31	322	656
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	66	84	150	0	0	0	0	0	0	84	66	150	300
Total	234	279	513	185	178	363	0	0	0	104	66	170	1046
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	69	69	40	0	40	111	66	177	78	94	172	458
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	89	0	107	107	99	72	171	124	133	257	624
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	102	223	45	45	90	101	120	221	0	0	0	534
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	27	55	27	28	55	0	0	0	0	0	0	110
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	45	90	45	45	90	0	0	0	0	0	0	180
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

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Impact Analysis Report
Level Of Service

Impact Analysis Report
Level Of Service

AM Peak Hour 5

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	11.6	0.000	B	14.0	0.000	+ 2.456 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.4	0.000	B	14.6	0.000	+ 4.183 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	11.7	0.000	B	11.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.3	0.000	B	11.5	0.000	+ 1.201 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.4	0.000	B	10.1	0.000	+ 0.761 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.3	0.000	B	13.5	0.000	+ 2.262 D/V
# 15 Geyserville Avenue at Hamilton	B	10.4	0.000	B	13.0	0.000	+ 2.615 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	A	10.0	0.000	A	10.0	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.200	A	7.7	0.200	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	C	15.9	0.000	F	120.6	0.000	+104.613 D/V
# 24 Highway 101 nb ramp at Healdsb	B	14.3	0.000	C	16.8	0.000	+ 2.473 D/V
# 31 Geyserville Avenue at Highway	A	9.1	0.296	A	9.1	0.296	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.9	0.204	A	7.9	0.204	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.5	0.000	B	13.5	0.000	+ 0.000 D/V

PM Peak Hour 5

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	C	15.6	0.000	D	27.2	0.000	+11.512 D/V
# 5 Highway 101 nb at Lytton Sprin	B	11.4	0.000	C	16.2	0.000	+ 4.851 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	12.0	0.000	B	12.0	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.5	0.000	B	11.5	0.000	+ 0.967 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.6	0.000	B	10.2	0.000	+ 0.657 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.4	0.000	B	14.1	0.000	+ 2.685 D/V
# 15 Geyserville Avenue at Hamilton	B	11.0	0.000	C	15.4	0.000	+ 4.321 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 17 Highway 101 nb ramp at Canyon	B	10.2	0.000	B	10.2	0.000	+ 0.000 D/V
# 18 Geyserville Avenue at Canyon R	A	8.1	0.227	A	8.1	0.227	+ 0.000 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 23 Highway 101 sb ramp at Healdsu	B	13.7	0.000	C	21.8	0.000	+ 8.141 D/V
# 24 Highway 101 nb ramp at Healdsb	B	13.8	0.000	C	16.7	0.000	+ 2.857 D/V
# 31 Geyserville Avenue at Highway	B	10.2	0.438	B	10.2	0.438	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	9.2	0.352	A	9.2	0.352	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	C	16.3	0.000	C	16.3	0.000	+ 0.000 D/V

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Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	68	0	5	0	41	38	148	26	0
ApproachDel:	xxxxxx			15.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	0 1	0	0 0
Initial Vol:	0	0	0	68	0	5	0	43	38	148	26	0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72
ApproachDel:	10.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	17 93 0	0 140 98
ApproachDel:	11.4	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	14 0 100	0 0 0	8 116 0	0 78 72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	40 0 95	0 0 0	17 93 0	0 140 98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                 Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled     Stop Sign        Stop Sign
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol:  135    0    0    0    0   15    21    0  185    0    0    0
ApproachDel:    xxxxxx           xxxxxx           11.7            xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
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SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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                 Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled     Stop Sign        Stop Sign
Lanes:       1  0  0  0  0    0  0  0  0  1    0  0  1! 0  0    0  0  0  0  0
Initial Vol:  214    0    0    0    0   24    18    0  170    0    0    0
ApproachDel:    xxxxxx           xxxxxx           12.0            xxxxxx
------------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.3	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=153]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=271]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	10.5	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.5]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=168]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=353]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 118	153 0 0	0 0 0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 0 1	1 0 0 0 0	0 0 0 0 0
Initial Vol:	0 0 0	0 0 185	168 0 0	0 0 0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	6	0	130	0	0	0	2	23	0	0	117	1
ApproachDel:	9.4			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	8	0	142	0	0	0	7	26	0	0	182	3
ApproachDel:	9.6			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0
ApproachDel:	xxxxxx	11.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 27 2	170 37 0
ApproachDel:	xxxxxx	11.4	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 21 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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                    Peak Hour Delay Signal Warrant Report
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Intersection #15 Geyserville Avenue at Hamilton Lane
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  0  1  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
Initial Vol:    0  153    0     0  118    0     0    0    0    10    0   10
ApproachDel:    xxxxxx           xxxxxx           xxxxxx            10.4
------------|---------------||---------------||---------------||---------------|
Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=291]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                    Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  0  1  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
Initial Vol:    0  168    0     0  185    0     0    0    0    10    0   10
ApproachDel:    xxxxxx           xxxxxx           xxxxxx            11.0
------------|---------------||---------------||---------------||---------------|
Approach[westbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=20]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=373]
   FAIL - Total volume less than 650 for intersection
          with less than four approaches.
--------------------------------------------------------------------------------
SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an
"indicator" of the likelihood of an unsignalized intersection warranting
a traffic signal in the future.  Intersections that exceed this warrant
are probably more likely to meet one or more of the other volume based
signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace
a rigorous and complete traffic signal warrant analysis by the responsible
jurisdiction.  Consideration of the other signal warrants, which is beyond
the scope of this software, may yield different results.
```

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0
ApproachDel:	xxxxxx	10.2	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0
ApproachDel:	xxxxxx	10.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0 0 0	0	0	0 1! 0	0	0	0 0 1	0	0	1 0 0	0
Initial Vol:	0	0	0	75	0	6	0	22	31	17	48	0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0 0 0	0	0	0 1! 0	0	0	0 0 1	0	0	1 0 0	0
Initial Vol:	0	0	0	36	0	4	0	58	53	16	62	0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	29	0	40	0	0	0	13	93	0	0	42	33
ApproachDel:	10.0			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	28	3	58	0	0	0	24	76	0	0	44	80
ApproachDel:	10.2			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 75 0	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	55	6	0	0	11	16	22	0	105	0	0	0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	93	28	0	0	18	27	17	0	84	0	0	0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	19	0	186	0	454	9	250	96	0
ApproachDel:	xxxxxx			15.9			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	15	1	280	0	414	15	79	130	0
ApproachDel:	xxxxxx			13.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=1.1]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1		1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 0 0414 0 15 0	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19
ApproachDel:	14.3	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 1160 0	0 357 18
ApproachDel:	13.8	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.8]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 169 0	0 357 18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Initial Vol:	0	48	73	69	80	0	0	0	0	79	0	55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Initial Vol:	0	77	76	55	67	0	0	0	0	112	0	107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Initial Vol:	64	2	2	5	3	33	15	25	82	7	21	3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 1! 0 0		
Initial Vol:	165	5	4	0	2	33	27	19	89	3	40	2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77
ApproachDel:	xxxxxx	13.5	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 92 0	0 250 158
ApproachDel:	xxxxxx	16.3	xxxxxx	xxxxxx

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			1 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	104	0	0	4	116	0	0	132	77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	82	0	5	5	92	0	0	250	158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
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```
AM Peak Hour 5           Mon Dec 29, 2008 05:36:28            Page 9-1
----------------------------------------------------------------------------
----------------------------------------------------------------------------
                    Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
****************************************************************************
Average Delay (sec/veh):      9.8       Worst Case Level Of Service: B[ 14.0]
****************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:        0    0     0    94    0    10     0   23     9    73   25     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    94    0    10     0   23     9    73   25     0
Added Vol:       0    0     0     0   66     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    94   66    10     0   23     9    73   25     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   140   98    15     0   34    13   108   37     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   140   98    15     0   34    13   108   37     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx    6.4  6.5   6.2 xxxxx xxxx xxxxx    4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx    3.5  4.0   3.3 xxxxx xxxx xxxxx    2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx    295  302    37  xxxx xxxx xxxxx    48 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    700  614  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    661  569  1041  xxxx xxxx xxxxx  1573 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx   0.21 0.17  0.01  xxxx xxxx  xxxx  0.07 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx    0.2 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx    7.5 xxxx xxxxx
LOS by Move:     *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    620 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx    1.8 xxxx xxxxx xxxxx xxxx xxxxx    0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx   14.4 xxxx xxxxx xxxxx xxxx xxxxx    7.5 xxxx xxxxx
Shared LOS:      *    *     *     B    *     *     *    *     *     A    *     *
ApproachDel:      xxxxxx            14.0            xxxxxx            xxxxxx
ApproachLOS:         *                B                *                 *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
```



```
PM Peak Hour 5           Mon Dec 29, 2008 05:36:40            Page 9-1
----------------------------------------------------------------------------
----------------------------------------------------------------------------
                    Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #4 Highway 101 sb at Lytton Springs Road
****************************************************************************
Average Delay (sec/veh):     13.2       Worst Case Level Of Service: D[ 27.2]
****************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  1  0  0  1    0  0  0  1  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0    68    0     5     0   43    38   148   26     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    68    0     5     0   43    38   148   26     0
Added Vol:       0    0     0     0   84     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    68   84     5     0   43    38   148   26     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   101  125     7     0   64    56   220   39     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   101  125     7     0   64    56   220   39     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx    6.4  6.5   6.2 xxxxx xxxx xxxxx    4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx    3.5  4.0   3.3 xxxxx xxxx xxxxx    2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx    570  599    39  xxxx xxxx xxxxx   120 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    486  418  1039  xxxx xxxx xxxxx  1480 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    423  347  1039  xxxx xxxx xxxxx  1480 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx   0.24 0.36  0.01  xxxx xxxx  xxxx  0.15 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   0.0  xxxx xxxx xxxxx    0.5 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx   8.5 xxxxx xxxx xxxxx    7.9 xxxx xxxxx
LOS by Move:     *    *     *     *    *     A     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    377 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx    3.7 xxxx xxxxx xxxxx xxxx xxxxx    0.5 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx   27.8 xxxx xxxxx xxxxx xxxx xxxxx    7.9 xxxx xxxxx
Shared LOS:      *    *     *     D    *     *     *    *     *     A    *     *
ApproachDel:      xxxxxx            27.2            xxxxxx            xxxxxx
ApproachLOS:         *                D                *                 *
****************************************************************************
Note: Queue reported is the number of cars per lane.
****************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
***********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
***********************************************************************************
Average Delay (sec/veh):      6.2       Worst Case Level Of Service: B[ 14.6]
***********************************************************************************
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:         Include          Include          Include           Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0   100     0    0     0     8  116     0     0   78    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14    0   100     0    0     0     8  116     0     0   78    72
Added Vol:      0   84     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   84   100     0    0     0     8  116     0     0   78    72
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    21  125   149     0    0     0    12  172     0     0  116   107
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   21  125   149     0    0     0    12  172     0     0  116   107
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  365  419   172  xxxx xxxx xxxxx   223 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  638  528   876  xxxx xxxx xxxxx  1358 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    634  524   876  xxxx xxxx xxxxx  1358 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.03 0.24  0.17  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  668 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 14.6 xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:       14.6           xxxxxx            xxxxxx            xxxxxx
ApproachLOS:          B              *                 *                 *
***********************************************************************************
Note: Queue reported is the number of cars per lane.
***********************************************************************************
```


Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
***********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
***********************************************************************************
Average Delay (sec/veh):      6.2       Worst Case Level Of Service: C[ 16.2]
***********************************************************************************
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:         Include          Include          Include           Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0    95     0    0     0    17   93     0     0  140    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40    0    95     0    0     0    17   93     0     0  140    98
Added Vol:      0   66     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   40   66    95     0    0     0    17   93     0     0  140    98
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    59   98   141     0    0     0    25  138     0     0  208   146
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   59   98   141     0    0     0    25  138     0     0  208   146
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  469  542   138  xxxx xxxx xxxxx   354 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  556  450   916  xxxx xxxx xxxxx  1216 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    547  441   916  xxxx xxxx xxxxx  1216 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.11 0.22  0.15  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  615 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.7 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 16.2 xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     A    *     *     *    *     *
ApproachDel:       16.2           xxxxxx            xxxxxx            xxxxxx
ApproachLOS:          C              *                 *                 *
***********************************************************************************
Note: Queue reported is the number of cars per lane.
***********************************************************************************
```

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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Average Delay (sec/veh):      9.6      Worst Case Level Of Service: B[ 11.7]
*****************************************************************************
Approach:      North Bound     South Bound      East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign       Stop Sign
Rights:          Include          Include         Include         Include
Lanes:        1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135    0     0     0    0    15    21    0   185     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135    0     0     0    0    15    21    0   185     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  135    0     0     0    0    15    21    0   185     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   201    0     0     0    0    22    31    0   275     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  201    0     0     0    0    22    31    0   275     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   22 xxxx xxxxx  xxxx xxxx xxxxx   401  401     0  xxxx xxxx xxxxx
Potent Cap.: 1606 xxxx xxxxx  xxxx xxxx xxxxx   609  541   900  xxxx xxxx xxxxx
Move Cap.:   1606 xxxx xxxxx  xxxx xxxx xxxxx   551  473   900  xxxx xxxx xxxxx
Volume/Cap:  0.12 xxxx  xxxx  xxxx xxxx  xxxx  0.06 0.00  0.31  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.4 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  845 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.7 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.7 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            11.7           xxxxxx
ApproachLOS:        *                *                B               *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Average Delay (sec/veh):      9.2      Worst Case Level Of Service: B[ 12.0]
*****************************************************************************
Approach:      North Bound     South Bound      East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign       Stop Sign
Rights:          Include          Include         Include         Include
Lanes:        1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     214    0     0     0    0    24    18    0   170     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  214    0     0     0    0    24    18    0   170     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  214    0     0     0    0    24    18    0   170     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   318    0     0     0    0    36    27    0   253     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  318    0     0     0    0    36    27    0   253     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   36 xxxx xxxxx  xxxx xxxx xxxxx   636  636     0  xxxx xxxx xxxxx
Potent Cap.: 1588 xxxx xxxxx  xxxx xxxx xxxxx   445  398   900  xxxx xxxx xxxxx
Move Cap.:   1588 xxxx xxxxx  xxxx xxxx xxxxx   377  318   900  xxxx xxxx xxxxx
Volume/Cap:  0.20 xxxx  xxxx  xxxx xxxx  xxxx  0.07 0.00  0.28  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.7 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  794 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.6 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.0 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            12.0           xxxxxx
ApproachLOS:        *                *                B               *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```

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------------------------------------------------------------------------------
------------------------------------------------------------------------------

                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
******************************************************************************
Average Delay (sec/veh):      6.5      Worst Case Level Of Service: B[ 11.5]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    0    0   118   153    0     0    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0    0    0   118   153    0     0    0    0     0
Added Vol:      0    0     0    0    0    66    84    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0    0    0     0
Initial Fut:    0    0     0    0    0   184   237    0     0    0    0     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31  1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0    0    0   273   352    0     0    0    0     0
Reduct Vol:     0    0     0    0    0     0     0    0     0    0    0     0
FinalVolume:    0    0     0    0    0   273   352    0     0    0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.39 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.9 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  11.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *    *    *     *     B    *     *    *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *    *    *     *     *    *     *    *    *     *
ApproachDel:     xxxxxx           xxxxxx             11.5            xxxxxx
ApproachLOS:        *                *                 B                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```



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PM Peak Hour 5            Mon Dec 29, 2008 05:36:40                Page 12-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
******************************************************************************
Average Delay (sec/veh):      5.3      Worst Case Level Of Service: B[ 11.5]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    0    0   185   168    0     0    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0    0    0   185   168    0     0    0    0     0
Added Vol:      0    0     0    0    0    84    66    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0     0    0     0    0    0     0
Initial Fut:    0    0     0    0    0   269   234    0     0    0    0     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31  1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88  0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0    0    0   400   348    0     0    0    0     0
Reduct Vol:     0    0     0    0    0     0     0    0     0    0    0     0
FinalVolume:    0    0     0    0    0   400   348    0     0    0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.39 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.8 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  11.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *    *    *     *     B    *     *    *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *    *    *     *     *    *     *    *    *     *
ApproachDel:     xxxxxx           xxxxxx             11.5            xxxxxx
ApproachLOS:        *                *                 B                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      5.2      Worst Case Level Of Service: B[ 10.1]
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       6    0   130     0    0     0     2   23     0     0  117     1
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6    0   130     0    0     0     2   23     0     0  117     1
Added Vol:      0    0    84     0    0     0     0    0     0     0   66     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6    0   214     0    0     0     2   23     0     0  183     1
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     9    0   318     0    0     0     3   34     0     0  272     1
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    9    0   318     0    0     0     3   34     0     0  272     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  313  313    34  xxxx xxxx xxxxx   273 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  684  605  1045  xxxx xxxx xxxxx  1302 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    683  604  1045  xxxx xxxx xxxxx  1302 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.00  0.30  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1030 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.1 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      10.1           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```


Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      4.4      Worst Case Level Of Service: B[ 10.2]
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       8    0   142     0    0     0     7   26     0     0  182     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    0   142     0    0     0     7   26     0     0  182     3
Added Vol:      0    0    66     0    0     0     0    0     0     0   84     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    8    0   208     0    0     0     7   26     0     0  266     3
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    12    0   309     0    0     0    10   39     0     0  395     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   12    0   309     0    0     0    10   39     0     0  395     4
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  457  459    39  xxxx xxxx xxxxx   400 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  565  502  1039  xxxx xxxx xxxxx  1170 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    562  497  1039  xxxx xxxx xxxxx  1170 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.00  0.30  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx 1007 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   8.1 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:      10.2           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Average Delay (sec/veh): 6.9 Worst Case Level Of Service: B[13.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module: >> Count Date: 17 May 2007 <<												
Base Vol:	0	0	0	20	0	8	0	23	6	120	23	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	20	0	8	0	23	6	120	23	0
Added Vol:	0	0	0	0	0	0	0	0	0	66	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	20	0	8	0	23	6	186	23	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	30	0	12	0	34	9	276	34	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	30	0	12	0	34	9	276	34	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	625	630	34	xxxx	xxxx	xxxxx	43	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	452	401	1045	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	380	318	1045	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.08	0.00	0.01	xxxx	xxxx	xxxx	0.18	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	464	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	0.6	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	13.5	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			13.5			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Average Delay (sec/veh): 6.5 Worst Case Level Of Service: B[14.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	4	0	4	0	27	2	170	37	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	4	0	4	0	27	2	170	37	0
Added Vol:	0	0	0	0	0	0	0	0	0	84	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	4	0	4	0	27	2	254	37	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	6	0	6	0	40	3	377	55	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	6	0	6	0	40	3	377	55	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	851	853	55	xxxx	xxxx	xxxxx	43	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	333	299	1018	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	255	208	1018	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.02	0.00	0.01	xxxx	xxxx	xxxx	0.24	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.9	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	408	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	xxxxx	xxxx	xxxxx	0.9	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	14.1	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			14.1			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
********************************************************************************
Average Delay (sec/veh):      2.5      Worst Case Level Of Service: B[ 13.0]
********************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled    Uncontrolled     Stop Sign       Stop Sign
Rights:          Include         Include         Include         Include
Lanes:       0  0  0  1  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  153    0     0  118    0     0    0    0    10    0    10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  153    0     0  118    0     0    0    0    10    0    10
Added Vol:      0    0   84     0    0    0     0    0    0    66    0     0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0     0
Initial Fut:    0  153   84     0  118    0     0    0    0    76    0    10
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0  227  125     0  175    0     0    0    0   113    0    15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0     0
FinalVolume:    0  227  125     0  175    0     0    0    0   113    0    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   465  465   290
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   559  498   754
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   559  498   754
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.20 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  577 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.8 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.0 xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    B     *
ApproachDel:     xxxxxx          xxxxxx          xxxxxx            13.0
ApproachLOS:        *               *               *                B
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
********************************************************************************
Average Delay (sec/veh):      3.1      Worst Case Level Of Service: C[ 15.4]
********************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled    Uncontrolled     Stop Sign       Stop Sign
Rights:          Include         Include         Include         Include
Lanes:       0  0  0  1  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  168    0     0  185    0     0    0    0    10    0    10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  168    0     0  185    0     0    0    0    10    0    10
Added Vol:      0    0   66     0    0    0     0    0    0    84    0     0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0     0
Initial Fut:    0  168   66     0  185    0     0    0    0    94    0    10
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0  250   98     0  275    0     0    0    0   140    0    15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0     0
FinalVolume:    0  250   98     0  275    0     0    0    0   140    0    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   573  573   299
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   484  432   746
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   484  432   746
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.29 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  501 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.3 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.4 xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    C     *
ApproachDel:     xxxxxx          xxxxxx          xxxxxx            15.4
ApproachLOS:        *               *               *                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      4.8      Worst Case Level Of Service: B[ 10.2]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  0  0  1  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        0    0     0    75    0     6     0   22    31    17   48     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    75    0     6     0   22    31    17   48     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    75    0     6     0   22    31    17   48     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0   111    0     9     0   33    46    25   71     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   111    0     9     0   33    46    25   71     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   178  201    71  xxxx xxxx xxxxx    79 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   817  699   997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   806  687   997  xxxx xxxx xxxxx  1532 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.14 0.00  0.01  xxxx xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  818 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx
Shared LOS:      *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx             10.2             xxxxxx           xxxxxx
ApproachLOS:        *                 B                 *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #16 Highway 101 sb ramp at Canyon Road
********************************************************************************
Average Delay (sec/veh):      2.3      Worst Case Level Of Service: B[ 10.3]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  0  0  1  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0    36    0     4     0   58    53    16   62     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    36    0     4     0   58    53    16   62     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    36    0     4     0   58    53    16   62     0
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      0    0     0    53    0     6     0   86    79    24   92     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0    53    0     6     0   86    79    24   92     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   265  305    92  xxxx xxxx xxxxx   165 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   728  612   971  xxxx xxxx xxxxx  1426 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   719  602   971  xxxx xxxx xxxxx  1426 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.07 0.00  0.01  xxxx xxxx  xxxx  0.02 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  738 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx
Shared LOS:      *    *     *     *    B     *     *    *     *     A    *     *
ApproachDel:     xxxxxx             10.3             xxxxxx           xxxxxx
ApproachLOS:        *                 B                 *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):      3.1      Worst Case Level Of Service: A[ 10.0]
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       29    0    40     0    0     0    13   93     0     0   42    33
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    29    0    40     0    0     0    13   93     0     0   42    33
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    29    0    40     0    0     0    13   93     0     0   42    33
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     43    0    59     0    0     0    19  138     0     0   62    49
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    43    0    59     0    0     0    19  138     0     0   62    49
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  264  288   138  xxxx xxxx xxxxx   111 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  730  625   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    722  617   916  xxxx xxxx xxxxx  1491 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.00  0.06  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  823 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.4 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.0 xxxxx xxxxx xxxx xxxxx   7.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    A     *     *    *     *     A    *     *     *    *     *
ApproachDel:       10.0            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         A                *                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #17 Highway 101 nb ramp at Canyon Road
***************************************************************************
Average Delay (sec/veh):      3.5      Worst Case Level Of Service: B[ 10.2]
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       28    3    58     0    0     0    24   75     0     0   44    80
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    28    3    58     0    0     0    24   75     0     0   44    80
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    28    3    58     0    0     0    24   75     0     0   44    80
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     42    4    86     0    0     0    36  111     0     0   65   119
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    42    4    86     0    0     0    36  111     0     0   65   119
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  308  367   111  xxxx xxxx xxxxx   184 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  689  565   947  xxxx xxxx xxxxx  1403 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    675  550   947  xxxx xxxx xxxxx  1403 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.06 0.01  0.09  xxxx xxxx  xxxx  0.03 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  823 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.6 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 10.2 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    B     *     *    *     *     A    *     *     *    *     *
ApproachDel:       10.2            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B                *                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.200
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.7
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	16	22	0	105	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	82	9	0	0	16	24	33	0	156	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	9	0	0	16	24	33	0	156	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	82	9	0	0	16	24	33	0	156	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.41	0.59	0.17	0.01	0.82	0.00	0.00	0.00
Final Sat.:	700	76	0	0	350	509	163	0	780	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	xxxx	xxxx	0.05	0.05	0.20	0.00	0.20	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.0	8.0	0.0	0.0	7.2	7.2	7.6	7.6	7.6	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:		8.0			7.2			7.6			xxxxxx	
Delay Adj:		1.00			1.00			1.00			xxxxx	
ApprAdjDel:		8.0			7.2			7.6			xxxxxx	
LOS by Appr:		A			A			A			*	
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.227
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.1
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	28	0	0	18	27	17	0	84	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	138	42	0	0	27	40	25	0	125	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	42	0	0	27	40	25	0	125	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	42	0	0	27	40	25	0	125	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.40	0.60	0.16	0.01	0.83	0.00	0.00	0.00
Final Sat.:	610	184	0	0	343	515	146	0	722	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	xxxx	xxxx	0.08	0.08	0.17	0.00	0.17	xxxx	xxxx	xxxx
Crit Moves:	****					****	****					
Delay/Veh:	8.7	8.7	0.0	0.0	7.4	7.4	7.7	7.7	7.7	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.7	8.7	0.0	0.0	7.4	7.4	7.7	7.7	7.7	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	A	A	*	*	*
ApproachDel:		8.7			7.4			7.7			xxxxxx	
Delay Adj:		1.00			1.00			1.00			xxxxx	
ApprAdjDel:		8.7			7.4			7.7			xxxxxx	
LOS by Appr:		A			A			A			*	
AllWayAvgQ:	0.3	0.3	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

```
--------------------------------------------------------------------------------
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                   Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28     0     0   27     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28     0     0   27     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   28     0     0   27     0     0    0     0     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   42     0     0   40     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   42     0     0   40     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx    82   82    42
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   925  812  1035
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   925  812  1035
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
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                   Level Of Service Computation Report
      2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45     0     0   45     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45     0     0   45     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   45     0     0   45     0     0    0     0     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   67     0     0   67     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   67     0     0   67     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   134  134    67
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   865  761  1002
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   865  761  1002
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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------------------------------------------------------------------------------
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                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #21 Geyserville Avenue at Private Road
******************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28     0     0   27     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   28     0     0   27     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   28     0     0   27     0     0    0     0     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   42     0     0   40     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   42     0     0   40     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #21 Geyserville Avenue at Private Road
******************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45     0     0   45     0     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   45     0     0   45     0     0    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0   45     0     0   45     0     0    0     0     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0   67     0     0   67     0     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0   67     0     0   67     0     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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---------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
***************************************************************************
Average Delay (sec/veh):     32.9      Worst Case Level Of Service: F[120.6]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      0    0     0   19    0   186     0  454     9   250   96     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0   19    0   186     0  454     9   250   96     0
Added Vol:     0    0     0   66    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0    0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0   85    0   186     0  454     9   250   96     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0  126    0   276     0  674    13   371  143     0
Reduct Vol:    0    0     0    0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0  126    0   276     0  674    13   371  143     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1567 1573   143  xxxx xxxx xxxxx   688 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   124  111   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    85   66   910  xxxx xxxx xxxxx   916 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  1.49 0.00  0.30  xxxx xxxx  xxxx  0.41 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   1.3  xxxx xxxx xxxxx   2.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  10.7 xxxxx xxxx xxxxx  11.6 xxxx xxxxx
LOS by Move:   *    *     *     *    *     B     *    *     *     B    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    85 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  10.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 361.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     F    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           120.6            xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
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---------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue
***************************************************************************
Average Delay (sec/veh):      8.9      Worst Case Level Of Service: C[ 21.8]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  1  0  0  1   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      0    0     0   15    1   280     0  414    15    79  130     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0   15    1   280     0  414    15    79  130     0
Added Vol:     0    0     0   84    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0    0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0   99    1   280     0  414    15    79  130     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    0    0     0  147    1   416     0  615    22   117  193     0
Reduct Vol:    0    0     0    0    0     0     0    0     0     0    0     0
FinalVolume:   0    0     0  147    1   416     0  615    22   117  193     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1054 1065   193  xxxx xxxx xxxxx   637 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   252  224   854  xxxx xxxx xxxxx   956 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   229  197   854  xxxx xxxx xxxxx   956 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.64 0.01  0.49  xxxx xxxx  xxxx  0.12 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx   2.7  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx  13.2 xxxxx xxxx xxxxx   9.3 xxxx xxxxx
LOS by Move:   *    *     *     *    *     B     *    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   228 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   4.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  46.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     E    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            21.8            xxxxxx           xxxxxx
ApproachLOS:        *                C                *                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      4.7      Worst Case Level Of Service: C[ 16.8]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        5    2  137     0    0    0   254  224    0     0  342   19
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     5    2  137     0    0    0   254  224    0     0  342   19
Added Vol:       0    0    0     0    0    0     0   66    0     0    0   84
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:     5    2  137     0    0    0   254  290    0     0  342  103
User Adj:     1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:      7    3  204     0    0    0   377  431    0     0  508  153
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:     7    3  204     0    0    0   377  431    0     0  508  153
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1770 1847   431  xxxx xxxx xxxxx   661 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:   93   76   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     64   45   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.12 0.07  0.32  xxxx xxxx  xxxx  0.40 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   1.4  xxxx xxxx xxxxx   2.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  13.4 xxxxx xxxx xxxxx  11.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    B     *    *    *     B    *    *     *    *    *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:   57 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 81.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     F    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:      16.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        C               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      5.4      Worst Case Level Of Service: C[ 16.7]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        9    0  196     0    0    0   250  169    0     0  357   18
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     9    0  196     0    0    0   250  169    0     0  357   18
Added Vol:       0    0    0     0    0    0     0   84    0     0    0   66
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:     9    0  196     0    0    0   250  253    0     0  357   84
User Adj:     1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:      0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     13    0  291     0    0    0   371  376    0     0  530  125
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    13    0  291     0    0    0   371  376    0     0  530  125
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1711 1774   376  xxxx xxxx xxxxx   655 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  101   84   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     70   51   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.19 0.00  0.43  xxxx xxxx  xxxx  0.39 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   2.2  xxxx xxxx xxxxx   1.9 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.3 xxxxx xxxx xxxxx  11.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *    B     *    *    *     B    *    *     *    *    *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:   70 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 68.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     F    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:      16.7           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        C               *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.296
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 9.1
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	71	108	103	119	0	0	0	0	117	0	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	71	108	103	119	0	0	0	0	117	0	82
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	71	108	103	119	0	0	0	0	117	0	82
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	321	489	346	402	0	0	0	0	434	0	302
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.30	0.30	xxxx	xxxx	xxxx	xxxx	0.27	xxxx	0.27
Crit Moves:		****			****					****		
Delay/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:	8.4			9.5			xxxxxx			9.2		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	8.4			9.5			xxxxxx			9.2		
LOS by Appr:	A			A			*			A		
AllWayAvgQ:	0.3	0.3	0.3	0.4	0.4	0.4	0.0	0.0	0.0	0.3	0.3	0.3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.438
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 10.2
Optimal Cycle: 0 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	114	113	82	100	0	0	0	0	166	0	159
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	114	113	82	100	0	0	0	0	166	0	159
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	114	113	82	100	0	0	0	0	166	0	159
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	373	368	306	373	0	0	0	0	380	0	363
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.31	0.31	0.27	0.27	xxxx	xxxx	xxxx	xxxx	0.44	xxxx	0.44
Crit Moves:		****			****							
Delay/Veh:	0.0	9.5	9.5	9.7	9.7	0.0	0.0	0.0	0.0	10.9	0.0	10.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	9.5	9.5	9.7	9.7	0.0	0.0	0.0	0.0	10.9	0.0	10.9
LOS by Move:	*	A	A	A	A	*	*	*	*	B	*	B
ApproachDel:	9.5			9.7			xxxxxx			10.9		
Delay Adj:	1.00			1.00			xxxxx			1.00		
ApprAdjDel:	9.5			9.7			xxxxxx			10.9		
LOS by Appr:	A			A			*			B		
AllWayAvgQ:	0.4	0.4	0.4	0.3	0.3	0.3	0.0	0.0	0.0	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.204
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	95	3	3	7	4	49	22	37	122	10	31	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	3	3	7	4	49	22	37	122	10	31	4
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	95	3	3	7	4	49	22	37	122	10	31	4
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	706	22	22	103	62	682	109	182	596	177	530	76
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.13	0.07	0.07	0.07	0.20	0.20	0.20	0.06	0.06	0.06
Crit Moves:	****				****			****			****	
Delay/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.3			7.3			7.9			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.3			7.3			7.9			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec):	100	Critical Vol./Cap.(X):	0.352
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	9.2
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0			0	0	0	0
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33	27	19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	27	19	89	3	40	2
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	245	7	6	0	3	49	40	28	132	4	59	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	245	7	6	0	3	49	40	28	132	4	59	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	245	7	6	0	3	49	40	28	132	4	59	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20	0.14	0.66	0.07	0.89	0.04
Final Sat.:	696	21	17	0	45	743	157	110	516	46	618	31
Capacity Analysis Module:												
Vol/Sat:	0.35	0.35	0.35	xxxx	0.07	0.07	0.26	0.26	0.26	0.10	0.10	0.10
Crit Moves:		****			****		****					****
Delay/Veh:	10.1	10.1	10.1	0.0	7.5	7.5	8.7	8.7	8.7	8.3	8.3	8.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.1	10.1	10.1	0.0	7.5	7.5	8.7	8.7	8.7	8.3	8.3	8.3
LOS by Move:	B	B	B	*	A	A	A	A	A	A	A	A
ApproachDel:		10.1			7.5			8.7			8.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.1			7.5			8.7			8.3	
LOS by Appr:		B			A			A			A	
AllWayAvgQ:	0.5	0.5	0.5	0.1	0.1	0.1	0.3	0.3	0.3	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*******************************************************************************
Average Delay (sec/veh):      3.3       Worst Case Level Of Service: B[ 13.5]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   1  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0   104    0     0     4  116     0     0  132    77
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   104    0     0     4  116     0     0  132    77
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   104    0     0     4  116     0     0  132    77
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   154    0     0     6  172     0     0  196   114
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   154    0     0     6  172     0     0  196   114
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   437 xxxx xxxxx   310 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   580 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   578 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.27 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   1.1 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  13.5 xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     B    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     A    *     *     *    *     *
ApproachDel:    xxxxxx            13.5            xxxxxx           xxxxxx
ApproachLOS:       *                B                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*******************************************************************************
Average Delay (sec/veh):      2.5       Worst Case Level Of Service: C[ 16.3]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0    82    0     5     5   92     0     0  250   158
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    82    0     5     5   92     0     0  250   158
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    82    0     5     5   92     0     0  250   158
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0   122    0     7     7  137     0     0  371   235
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   122    0     7     7  137     0     0  371   235
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   640  640   489   606 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   443  396   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   440  393   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.28 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  446 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  1.2 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 16.3 xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    C     *     A    *     *     *    *     *
ApproachDel:    xxxxxx            16.3            xxxxxx           xxxxxx
ApproachLOS:       *                C                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Scenario Report

Scenario:	AM Peak Hour 678
Command:	AM Peak Hour 6
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 6
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 6

Scenario Report

Scenario:	PM Peak Hour 678
Command:	PM Peak Hour 6
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 6
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 6

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Trip Generation Report

Forecast for AM Peak Hour 6

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
678	Route 6,7,8	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
Zone 678 Subtotal						84	66	150	100.0
TOTAL						84	66	150	100.0

Trip Generation Report

Forecast for PM Peak Hour 6

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
678	Route 6,7,8	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
Zone 678 Subtotal						66	84	150	100.0
TOTAL						66	84	150	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Turning Movement Report
AM Peak Hour 6

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	220	0	0	209	0	429
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	220	0	0	209	0	429
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	94	0	10	0	23	9	73	25	0	234
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	94	66	10	0	23	9	73	25	0	300
#5 Highway 101 nb at Lytton Springs Road													
Base	14	0	100	0	0	0	8	116	0	0	78	72	388
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	14	84	100	0	0	0	8	116	0	0	78	72	472
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	0	0	0	0	15	21	0	185	0	0	0	356
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	0	0	0	0	15	21	0	185	0	0	0	356
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	0	66	0	0	0	0	0	0	0	66
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	0	84	0	0	0	0	0	0	0	0	0	0	84

Turning Movement Report
PM Peak Hour 6

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	0	174	0	0	408	0	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	174	0	0	408	0	582
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#4 Highway 101 sb at Lytton Springs Road													
Base	0	0	0	68	0	5	0	43	38	148	26	0	328
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	68	84	5	0	43	38	148	26	0	412
#5 Highway 101 nb at Lytton Springs Road													
Base	40	0	95	0	0	0	17	93	0	0	140	98	483
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	40	66	95	0	0	0	17	93	0	0	140	98	549
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	0	0	0	0	24	18	0	170	0	0	0	426
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	0	0	0	0	24	18	0	170	0	0	0	426
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	0	84	0	0	0	0	0	0	0	84
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	0	66	0	0	0	0	0	0	0	0	0	0	66

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	118	153	0	0	0	0	0	271
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	118	153	0	0	0	0	0	271
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	6	0	130	0	0	0	2	23	0	0	117	1	279
Added	0	84	0	0	0	0	0	0	0	0	0	0	84
Total	6	84	130	0	0	0	2	23	0	0	117	1	363
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	20	0	8	0	23	6	120	23	0	200
Added	0	0	0	0	66	0	0	0	0	0	0	0	66
Total	0	0	0	20	66	8	0	23	6	120	23	0	266
#15 Geyserville Avenue at Hamilton Lane													
Base	0	153	0	0	118	0	0	0	0	10	0	10	291
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	153	0	0	118	0	0	0	0	10	0	10	291
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	75	0	6	0	22	31	17	48	0	199
Added	0	0	0	0	0	0	0	0	0	66	0	0	66
Total	0	0	0	75	0	6	0	22	31	83	48	0	265
#17 Highway 101 nb ramp at Canyon Road													
Base	29	0	40	0	0	0	13	93	0	0	42	33	250
Added	0	0	84	0	0	0	0	0	0	0	66	0	150
Total	29	0	124	0	0	0	13	93	0	0	108	33	400
#18 Geyserville Avenue at Canyon Road													
Base	55	6	0	0	11	16	22	0	105	0	0	0	215
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	55	6	0	0	11	82	106	0	105	0	0	0	365
#19 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	84	0	0	66	0	0	0	0	0	0	0	150
Total	0	112	0	0	93	0	0	0	0	0	0	0	205
#20 Geyserville Avevnue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	84	0	0	66	0	0	0	0	0	0	0	150
Total	0	112	0	0	93	0	0	0	0	0	0	0	205

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	0	0	185	168	0	0	0	0	0	353
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	185	168	0	0	0	0	0	353
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	8	0	142	0	0	0	7	26	0	0	182	3	368
Added	0	66	0	0	0	0	0	0	0	0	0	0	66
Total	8	66	142	0	0	0	7	26	0	0	182	3	434
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	0	0	4	0	4	0	27	2	170	37	0	244
Added	0	0	0	0	84	0	0	0	0	0	0	0	84
Total	0	0	0	4	84	4	0	27	2	170	37	0	328
#15 Geyserville Avenue at Hamilton Lane													
Base	0	168	0	0	185	0	0	0	0	10	0	10	373
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	0	0	185	0	0	0	0	10	0	10	373
#16 Highway 101 sb ramp at Canyon Road													
Base	0	0	0	36	0	4	0	58	53	16	62	0	229
Added	0	0	0	0	0	0	0	0	0	84	0	0	84
Total	0	0	0	36	0	4	0	58	53	100	62	0	313
#17 Highway 101 nb ramp at Canyon Road													
Base	28	3	58	0	0	0	24	75	0	0	44	80	312
Added	0	0	66	0	0	0	0	0	0	0	84	0	150
Total	28	3	124	0	0	0	24	75	0	0	128	80	462
#18 Geyserville Avenue at Canyon Road													
Base	93	28	0	0	18	27	17	0	84	0	0	0	267
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	93	28	0	0	18	111	83	0	84	0	0	0	417
#19 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	66	0	0	84	0	0	0	0	0	0	0	150
Total	0	111	0	0	129	0	0	0	0	0	0	0	240
#20 Geyserville Avevnue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	66	0	0	84	0	0	0	0	0	0	0	150
Total	0	111	0	0	129	0	0	0	0	0	0	0	240

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	28	0	0	27	0	0	0	0	0	0	0	55
Added	0	0	84	0	0	0	0	0	0	66	0	0	150
Total	0	28	84	0	27	0	0	0	0	66	0	0	205
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	5	2	137	0	0	0	254	224	0	0	342	19	983
Added	0	0	0	0	0	0	0	66	0	0	0	84	150
Total	5	2	137	0	0	0	254	290	0	0	342	103	1133
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	0	0	0	0	0	0	84	0	0	0	150
Total	66	0	0	0	0	0	0	0	84	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	84	66	0	0	0	0	0	150
Total	0	0	0	0	0	84	66	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	48	73	69	80	0	0	0	0	79	0	55	404
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	48	73	69	80	0	0	0	0	79	0	55	404
#32 River Road/Moody Lane/State Route 128													
Base	64	2	2	5	3	33	15	25	82	7	21	3	262
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	2	2	5	3	33	15	25	82	7	21	3	262

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#21 Geyserville Avenue at Private Road													
Base	0	45	0	0	45	0	0	0	0	0	0	0	90
Added	0	0	66	0	0	0	0	0	0	84	0	0	150
Total	0	45	66	0	45	0	0	0	0	84	0	0	240
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	9	0	196	0	0	0	250	169	0	0	357	18	999
Added	0	0	0	0	0	0	0	84	0	0	0	66	150
Total	9	0	196	0	0	0	250	253	0	0	357	84	1149
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	0	0	0	0	0	0	66	0	0	0	150
Total	84	0	0	0	0	0	0	0	66	0	0	0	150
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	66	84	0	0	0	0	0	150
Total	0	0	0	0	0	66	84	0	0	0	0	0	150
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	0	77	76	55	67	0	0	0	0	112	0	107	494
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	77	76	55	67	0	0	0	0	112	0	107	494
#32 River Road/Moody Lane/State Route 128													
Base	165	5	4	0	2	33	27	19	89	3	40	2	389
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	165	5	4	0	2	33	27	19	89	3	40	2	389

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Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	0	0	4	116	0	0	132	77	433
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	0	0	4	116	0	0	132	77	433

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	82	0	5	5	92	0	0	250	158	592
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	82	0	5	5	92	0	0	250	158	592

Link Volume Report
AM Peak Hour 6

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	220	209	429	209	220	429	858
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	220	209	429	209	220	429	858
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#4 Highway 101 sb at Lytton Springs Road													
Base	0	82	82	104	0	104	32	35	67	98	117	215	468
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	148	148	170	0	170	32	35	67	98	117	215	600
#5 Highway 101 nb at Lytton Springs Road													
Base	114	0	114	0	80	80	124	92	216	150	216	366	776
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	198	0	198	0	164	164	124	92	216	150	216	366	944
#6 Healdsburg Avenue at Lytton Springs Road													
Base	135	185	320	15	21	36	206	150	356	0	0	0	712
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	185	320	15	21	36	206	150	356	0	0	0	712
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	66	66	66	0	66	0	0	0	0	0	0	132
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	84	0	84	0	84	84	0	0	0	0	0	0	168

Link Volume Report
PM Peak Hour 6

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#1 Private Road at Alexander Valley Road													
Base	0	0	0	0	0	0	174	408	582	408	174	582	1164
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	174	408	582	408	174	582	1164
#2 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132
#3 Highway 101 sb ramp at Alexander Valley Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#4 Highway 101 sb at Lytton Springs Road													
Base	0	186	186	73	0	73	81	31	112	174	111	285	656
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	270	270	157	0	157	81	31	112	174	111	285	824
#5 Highway 101 nb at Lytton Springs Road													
Base	135	0	135	0	115	115	110	180	290	238	188	426	966
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	201	0	201	0	181	181	110	180	290	238	188	426	1098
#6 Healdsburg Avenue at Lytton Springs Road													
Base	214	170	384	24	18	42	188	238	426	0	0	0	852
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	170	384	24	18	42	188	238	426	0	0	0	852
#7 Healdsburg Avenue at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#8 Hassett Lane at Lytton Station Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#9 Highway 101 sb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	84	84	84	0	84	0	0	0	0	0	0	168
#10 Highway 101 nb ramp at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	66	0	66	0	66	66	0	0	0	0	0	0	132

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	118	153	271	153	118	271	0	0	0	542
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	118	153	271	153	118	271	0	0	0	542
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	136	0	136	0	3	3	25	123	148	118	153	271	558
Added	84	0	84	0	84	84	0	0	0	0	0	0	168
Total	220	0	220	0	87	87	25	123	148	118	153	271	726
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	126	126	28	0	28	29	31	60	143	43	186	400
Added	0	66	66	66	0	66	0	0	0	0	0	0	132
Total	0	192	192	94	0	94	29	31	60	143	43	186	532
#15 Geyserville Avenue at Hamilton Lane													
Base	153	128	281	118	163	281	0	0	0	20	0	20	582
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	128	281	118	163	281	0	0	0	20	0	20	582
#16 Highway 101 sb ramp at Canyon Road													
Base	0	48	48	81	0	81	53	54	107	65	97	162	398
Added	0	66	66	0	0	0	0	0	0	66	0	66	132
Total	0	114	114	81	0	81	53	54	107	131	97	228	530
#17 Highway 101 nb ramp at Canyon Road													
Base	69	0	69	0	46	46	106	71	177	75	133	208	500
Added	84	0	84	0	0	0	0	66	66	66	84	150	300
Total	153	0	153	0	46	46	106	137	243	141	217	358	800
#18 Geyserville Avenue at Canyon Road													
Base	61	116	177	27	28	55	127	71	198	0	0	0	430
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	61	116	177	93	112	205	211	137	348	0	0	0	730
#19 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	84	66	150	66	84	150	0	0	0	0	0	0	300
Total	112	93	205	93	112	205	0	0	0	0	0	0	410
#20 Geyserville Avevnue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	84	66	150	66	84	150	0	0	0	0	0	0	300
Total	112	93	205	93	112	205	0	0	0	0	0	0	410

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#11 Geyserville Avenue at Independance Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#12 Geyserville Avenue at Banti Lane													
Base	0	0	0	185	168	353	168	185	353	0	0	0	706
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	185	168	353	168	185	353	0	0	0	706
#13 Highway 101 nb ramp at Geyserville Avenue													
Base	150	0	150	0	10	10	33	190	223	185	168	353	736
Added	66	0	66	0	66	66	0	0	0	0	0	0	132
Total	216	0	216	0	76	76	33	190	223	185	168	353	868
#14 Highway 101 sb ramp at Geyserville Avenue													
Base	0	172	172	8	0	8	29	41	70	207	31	238	488
Added	0	84	84	84	0	84	0	0	0	0	0	0	168
Total	0	256	256	92	0	92	29	41	70	207	31	238	656
#15 Geyserville Avenue at Hamilton Lane													
Base	168	195	363	185	178	363	0	0	0	20	0	20	746
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	168	195	363	185	178	363	0	0	0	20	0	20	746
#16 Highway 101 sb ramp at Canyon Road													
Base	0	69	69	40	0	40	111	66	177	78	94	172	458
Added	0	84	84	0	0	0	0	0	0	84	0	84	168
Total	0	153	153	40	0	40	111	66	177	162	94	256	626
#17 Highway 101 nb ramp at Canyon Road													
Base	89	0	89	0	107	107	99	72	171	124	133	257	624
Added	66	0	66	0	0	0	0	84	84	84	66	150	300
Total	155	0	155	0	107	107	99	156	255	208	199	407	924
#18 Geyserville Avenue at Canyon Road													
Base	121	102	223	45	45	90	101	120	221	0	0	0	534
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	121	102	223	129	111	240	167	204	371	0	0	0	834
#19 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	66	84	150	84	66	150	0	0	0	0	0	0	300
Total	111	129	240	129	111	240	0	0	0	0	0	0	480
#20 Geyserville Avevnue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	66	84	150	84	66	150	0	0	0	0	0	0	300
Total	111	129	240	129	111	240	0	0	0	0	0	0	480

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	28	27	55	27	28	55	0	0	0	0	0	0	110
Added	84	66	150	0	0	0	0	0	0	66	84	150	300
Total	112	93	205	27	28	55	0	0	0	66	84	150	410
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	144	0	144	0	275	275	478	347	825	361	361	722	1966
Added	0	0	0	0	84	84	66	0	66	84	66	150	300
Total	144	0	144	0	359	359	544	347	891	445	427	872	2266
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	66	84	150	0	0	0	84	66	150	0	0	0	300
Total	66	84	150	0	0	0	84	66	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	84	66	150	66	84	150	0	0	0	300
Total	0	0	0	84	66	150	66	84	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	121	159	280	149	103	252	0	0	0	134	142	276	808
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	121	159	280	149	103	252	0	0	0	134	142	276	808
#32 River Road/Moody Lane/State Route 128													
Base	68	92	160	41	20	61	122	118	240	31	32	63	524
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	92	160	41	20	61	122	118	240	31	32	63	524

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#21 Geyserville Avenue at Private Road													
Base	45	45	90	45	45	90	0	0	0	0	0	0	180
Added	66	84	150	0	0	0	0	0	0	84	66	150	300
Total	111	129	240	45	45	90	0	0	0	84	66	150	480
#22													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036
#24 Highway 101 nb ramp at Healdsburg Avenue													
Base	205	0	205	0	268	268	419	366	785	375	365	740	1998
Added	0	0	0	0	66	66	84	0	84	66	84	150	300
Total	205	0	205	0	334	334	503	366	869	441	449	890	2298
#25 Syar Entrance at Healdsburg Avenue													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	84	66	150	0	0	0	66	84	150	0	0	0	300
Total	84	66	150	0	0	0	66	84	150	0	0	0	300
#26													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	66	84	150	84	66	150	0	0	0	300
Total	0	0	0	66	84	150	84	66	150	0	0	0	300
#27 Geyersville Avenue at Ferguson Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#30 River Road at Private Road													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#31 Geyserville Avenue at Highway 128													
Base	153	179	332	122	184	306	0	0	0	219	131	350	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	179	332	122	184	306	0	0	0	219	131	350	988
#32 River Road/Moody Lane/State Route 128													
Base	174	94	268	35	34	69	135	238	373	45	23	68	778
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	174	94	268	35	34	69	135	238	373	45	23	68	778

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	104	81	185	120	132	252	209	220	429	866
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	104	81	185	120	132	252	209	220	429	866

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#33													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#34 Lytton Station Road at Alexander Valley Road													
Base	0	0	0	87	163	250	97	255	352	408	174	582	1184
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	87	163	250	97	255	352	408	174	582	1184

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to DOWLING ASSOC., OAKLAND

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	B	11.6	0.000	B	14.0	0.000	+ 2.456 D/V
# 5 Highway 101 nb at Lytton Sprin	B	10.4	0.000	B	14.6	0.000	+ 4.183 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	11.7	0.000	B	11.7	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.3	0.000	B	10.3	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.4	0.000	B	11.7	0.000	+ 2.339 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.3	0.000	C	15.2	0.000	+ 3.929 D/V
# 15 Geyserville Avenue at Hamilton	B	10.4	0.000	B	10.4	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.2	0.000	B	12.4	0.000	+ 2.217 D/V
# 17 Highway 101 nb ramp at Canyon	A	10.0	0.000	B	10.8	0.000	+ 0.829 D/V
# 18 Geyserville Avenue at Canyon R	A	7.7	0.200	A	9.0	0.377	+ 0.177 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	A	9.8	0.000	+ 9.767 D/V
# 23 Highway 101 sb ramp at Healdsu	C	15.9	0.000	F	120.6	0.000	+104.613 D/V
# 24 Highway 101 nb ramp at Healdsb	B	14.3	0.000	C	16.8	0.000	+ 2.473 D/V
# 31 Geyserville Avenue at Highway	A	9.1	0.296	A	9.1	0.296	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	7.9	0.204	A	7.9	0.204	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	B	13.5	0.000	B	13.5	0.000	+ 0.000 D/V

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/C	Future LOS	Future Del/ Veh	Future V/C	Change in
# 4 Highway 101 sb at Lytton Sprin	C	15.6	0.000	D	27.2	0.000	+11.512 D/V
# 5 Highway 101 nb at Lytton Sprin	B	11.4	0.000	C	16.2	0.000	+ 4.851 D/V
# 6 Healdsburg Avenue at Lytton Sp	B	12.0	0.000	B	12.0	0.000	+ 0.000 D/V
# 12 Geyserville Avenue at Banti La	B	10.5	0.000	B	10.5	0.000	+ 0.000 D/V
# 13 Highway 101 nb ramp at Geyserv	A	9.6	0.000	B	12.1	0.000	+ 2.527 D/V
# 14 Highway 101 sb ramp at Geyserv	B	11.4	0.000	C	21.7	0.000	+10.255 D/V
# 15 Geyserville Avenue at Hamilton	B	11.0	0.000	B	11.0	0.000	+ 0.000 D/V
# 16 Highway 101 sb ramp at Canyon	B	10.3	0.000	B	13.1	0.000	+ 2.799 D/V
# 17 Highway 101 nb ramp at Canyon	B	10.2	0.000	B	11.0	0.000	+ 0.766 D/V
# 18 Geyserville Avenue at Canyon R	A	8.1	0.227	A	9.1	0.325	+ 0.099 V/C
# 20 Geyserville Avevnue at Private	A	0.0	0.000	A	0.0	0.000	+ 0.000 D/V
# 21 Geyserville Avenue at Private	A	0.0	0.000	B	10.2	0.000	+10.242 D/V
# 23 Highway 101 sb ramp at Healdsu	B	13.7	0.000	C	21.8	0.000	+ 8.141 D/V
# 24 Highway 101 nb ramp at Healdsb	B	13.8	0.000	C	16.7	0.000	+ 2.857 D/V
# 31 Geyserville Avenue at Highway	B	10.2	0.438	B	10.2	0.438	+ 0.000 V/C
# 32 River Road/Moody Lane/State Ro	A	9.2	0.352	A	9.2	0.352	+ 0.000 V/C
# 34 Lytton Station Road at Alexand	C	16.3	0.000	C	16.3	0.000	+ 0.000 D/V

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 4 Highway 101 sb at Lytton Springs Ro	No / No	??? / ???
# 5 Highway 101 nb at Lytton Springs Ro	No / No	??? / ???
# 6 Healdsburg Avenue at Lytton Springs	No / No	??? / ???
# 12 Geyserville Avenue at Banti Lane	No / No	??? / ???
# 13 Highway 101 nb ramp at Geyserville	No / No	??? / ???
# 14 Highway 101 sb ramp at Geyserville	No / No	??? / ???
# 15 Geyserville Avenue at Hamilton Lane	No / No	??? / ???
# 16 Highway 101 sb ramp at Canyon Road	No / No	??? / ???
# 17 Highway 101 nb ramp at Canyon Road	No / No	??? / ???
# 18 Geyserville Avenue at Canyon Road	No	???
# 20 Geyserville Avevnue at Private Road	No / No	??? / ???
# 21 Geyserville Avenue at Private Road	No / No	??? / ???
# 23 Highway 101 sb ramp at Healdsubrg A	No / No	??? / ???
# 24 Highway 101 nb ramp at Healdsburg A	No / No	??? / ???
# 31 Geyserville Avenue at Highway 128	No	???
# 32 River Road/Moody Lane/State Route 1	No	???
# 34 Lytton Station Road at Alexander Va	No / No	??? / ???

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	94	0	10	0	23	9	73	25	0
ApproachDel:	xxxxxx			11.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=104]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=234]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	68	0	5	0	43	38	148	26	0
ApproachDel:	xxxxxx			15.6			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=73]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=328]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	94 0 10	0 23 9	73 25 0

Major Street Volume: 130
Minor Approach Volume: 104
Minor Approach Volume Threshold: 934

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 Highway 101 sb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	68 0 5	0 43 38	148 26 0

Major Street Volume: 255
Minor Approach Volume: 73
Minor Approach Volume Threshold: 722

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	14	0	100	0	0	0	8	116	0	0	78	72
ApproachDel:	10.4			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=114]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=388]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	40	0	95	0	0	0	17	93	0	0	140	98
ApproachDel:	11.4			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=135]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=483]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	14	0	100	0	0	0	8	116	0	0	78	72

Major Street Volume: 274
Minor Approach Volume: 114
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 Highway 101 nb at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	40	0	95	0	0	0	17	93	0	0	140	98

Major Street Volume: 348
Minor Approach Volume: 135
Minor Approach Volume Threshold: 501

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	135 0 0	0 0 15	21 0 185	0 0 0
ApproachDel:	xxxxxx	xxxxxx	11.7	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=206]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=356]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 0 0 0	0 0 0 0 1	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	214 0 0	0 0 24	18 0 170	0 0 0
ApproachDel:	xxxxxx	xxxxxx	12.0	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=188]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=426]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	135	0	0	0	0	15	21	0	185	0	0	0

Major Street Volume: 150
Minor Approach Volume: 206
Minor Approach Volume Threshold: 725

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Healdsburg Avenue at Lytton Springs Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 0 0 0			0 0 0 0 1			0 0 1! 0 0			0 0 0 0 0		
Initial Vol:	214	0	0	0	0	24	18	0	170	0	0	0

Major Street Volume: 238
Minor Approach Volume: 188
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.3			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=153]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=271]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0
ApproachDel:	xxxxxx			xxxxxx			10.5			xxxxxx		

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.5]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=168]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=2][total volume=353]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	118	153	0	0	0	0	0

Major Street Volume: 118
Minor Approach Volume: 153
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 Geyserville Avenue at Banti Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1! 0 0			0 0 0 0 1			1 0 0 0 0			0 0 0 0 0		
Initial Vol:	0	0	0	0	0	185	168	0	0	0	0	0

Major Street Volume: 185
Minor Approach Volume: 168
Minor Approach Volume Threshold: 669

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	6	0	130	0	0	0	2	23	0	0	117	1
ApproachDel:		9.4			xxxxxx			xxxxxx			xxxxxx	

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=136]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=279]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 1	0	0 0	0 0	0	1 0
Initial Vol:	8	0	142	0	0	0	7	26	0	0	182	3
ApproachDel:		9.6			xxxxxx			xxxxxx			xxxxxx	

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=150]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=368]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	6 0 130	0 0 0	2 23 0	0 117 1

Major Street Volume: 143
Minor Approach Volume: 136
Minor Approach Volume Threshold: 738

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Highway 101 nb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	8 0 142	0 0 0	7 26 0	0 182 3

Major Street Volume: 218
Minor Approach Volume: 150
Minor Approach Volume Threshold: 626

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0 0	0	0 0	1! 0	0	0 0	0 1	0	0 1	0 0	0
Initial Vol:	0	0	0	20	0	8	0	23	6	120	23	0
ApproachDel:	xxxxxx			11.3			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=28]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=200]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0	0 0	0	0 0	1! 0	0	0 0	0 1	0	0 1	0 0	0
Initial Vol:	0	0	0	4	0	4	0	27	2	170	37	0
ApproachDel:	xxxxxx			11.4			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=8]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=244]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	20 0 8	0 23 6	120 23 0

Major Street Volume: 172
Minor Approach Volume: 28
Minor Approach Volume Threshold: 689

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	4 0 4	0 21 2	170 37 0

Major Street Volume: 236
Minor Approach Volume: 8
Minor Approach Volume Threshold: 604

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Initial Vol:	0	153	0	0	118	0	0	0	0	10	0	10
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.4		

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=20]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=291]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 0 0			0 0 1 0 0			0 0 0 0 0			0 0 1! 0 0		
Initial Vol:	0	168	0	0	185	0	0	0	0	10	0	10
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.0		

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=20]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=373]

FAIL - Total volume less than 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 153 0	0 118 0	0 0 0	10 0 10

Major Street Volume: 271
Minor Approach Volume: 20
Minor Approach Volume Threshold: 568

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #15 Geyserville Avenue at Hamilton Lane

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 168 0	0 185 0	0 0 0	10 0 10

Major Street Volume: 353
Minor Approach Volume: 20
Minor Approach Volume Threshold: 497

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	75	0	6	0	22	31	17	48	0
ApproachDel:	xxxxxx			10.2			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=81]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=199]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Initial Vol:	0	0	0	36	0	4	0	58	53	16	62	0
ApproachDel:	xxxxxx			10.3			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=229]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	75 0 6	0 22 31	17 48 0

Major Street Volume: 118
Minor Approach Volume: 81
Minor Approach Volume Threshold: 789

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #16 Highway 101 sb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 0 0 1 0	0 1 0 0 0
Initial Vol:	0 0 0	36 0 4	0 58 53	16 62 0

Major Street Volume: 189
Minor Approach Volume: 40
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33
ApproachDel:	10.0	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=69]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=250]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 76 0	0 44 80
ApproachDel:	10.2	xxxxxx	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=89]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=312]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	29 0 40	0 0 0	13 93 0	0 42 33

Major Street Volume: 181
Minor Approach Volume: 69
Minor Approach Volume Threshold: 675

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #17 Highway 101 nb ramp at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	28 3 58	0 0 0	24 76 0	0 44 80

Major Street Volume: 223
Minor Approach Volume: 89
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	55 6 0	0 11 16	22 0 105	0 0 0

Major Street Volume: 127
Minor Approach Volume: 61
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #18 Geyserville Avenue at Canyon Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	93 28 0	0 18 27	17 0 84	0 0 0

Major Street Volume: 166
Minor Approach Volume: 101
Minor Approach Volume Threshold: 698

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #20 Geyserville Avevnue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 0 1 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	1 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	[illegible]	1 0 0 0 0
Initial Vol:	0 45 0	0 45 0	[illegible]	0 0 0
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	1 0 0 0 0
Initial Vol:	0 28 0	0 27 0	0 0 0	0 0 0

Major Street Volume: 55
Minor Approach Volume: 0
Minor Approach Volume Threshold: 993

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #21 Geyserville Avenue at Private Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 0 1 0 0	0 0 0 0 0	1 0 0 0 0
Initial Vol:	0 45 0	0 45 0	0 0 0	0 0 0

Major Street Volume: 90
Minor Approach Volume: 0
Minor Approach Volume Threshold: 862

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	19	0	186	0	454	9	250	96	0
ApproachDel:	xxxxxx			15.9			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.9]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1014]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	15	1	280	0	414	15	79	130	0
ApproachDel:	xxxxxx			13.7			xxxxxx			xxxxxx		

Approach[southbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=1.1]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=296]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=934]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	19 0 186	0 454 9	250 96 0

Major Street Volume: 809
Minor Approach Volume: 205
Minor Approach Volume Threshold: 465

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	1 0 1 0 0
Initial Vol:	0 0 0	15 1 280	0 414 15	79 130 0

Major Street Volume: 638
Minor Approach Volume: 296
Minor Approach Volume Threshold: 567

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	5	2	137	0	0	0	254	224	0	0	342	19
ApproachDel:	14.3			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.6]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=144]
FAIL - Approach volume less than 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=983]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Initial Vol:	9	0	196	0	0	0	250	1160	0	0	357	18
ApproachDel:	13.8			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=2][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.8]
FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=205]
SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=999]
SUCCEED - Total volume greater than or equal to 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	5 2 137	0 0 0	254 224 0	0 342 19

Major Street Volume: 839
Minor Approach Volume: 144
Minor Approach Volume Threshold: 450

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #24 Highway 101 nb ramp at Healdsburg Avenue

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 1 0 0 1	0 0 0 0 0	1 0 1 0 0	0 0 1 0 1
Initial Vol:	9 0 196	0 0 0	250 1160 0	0 357 18

Major Street Volume: 794
Minor Approach Volume: 205
Minor Approach Volume Threshold: 473

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 48 73	69 80 0	0 0 0	79 0 55

Major Street Volume: 270
Minor Approach Volume: 134
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #31 Geyserville Avenue at Highway 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 77 76	55 67 0	0 0 0	112 0 107

Major Street Volume: 275
Minor Approach Volume: 219
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	64 2 2	5 3 33	15 25 82	7 21 3

Major Street Volume: 153
Minor Approach Volume: 68
Minor Approach Volume Threshold: 720

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #32 River Road/Moody Lane/State Route 128

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Lanes:	0 0 1! 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	165 5 4	0 2 33	27 19 89	3 40 2

Major Street Volume: 209
Minor Approach Volume: 135
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			1 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	104	0	0	4	116	0	0	132	77
ApproachDel:	xxxxxx			13.5			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=104]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=433]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Delay Signal Warrant Report

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Initial Vol:	0	0	0	82	0	5	5	92	0	0	250	158
ApproachDel:	xxxxxx			16.3			xxxxxx			xxxxxx		

Approach[southbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=87]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=592]
FAIL - Total volume less than 650 for intersection
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	1 0 0 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	104 0 0	4 116 0	0 132 77

Major Street Volume: 329
Minor Approach Volume: 104
Minor Approach Volume Threshold: 516

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

Intersection #34 Lytton Station Road at Alexander Valley Road

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 0 0 0	0 0 1! 0 0	0 1 0 0 0	0 0 0 1 0
Initial Vol:	0 0 0	82 0 5	5 90 0	0 250 158

Major Street Volume: 505
Minor Approach Volume: 87
Minor Approach Volume Threshold: 402

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Highway 101 sb at Lytton Springs Road

Average Delay (sec/veh): 9.8 Worst Case Level Of Service: B[14.0]

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Rights:	Include	Include	Include	Include
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Volume Module: >> Count Date: 17 May 2007 <<				
Base Vol:	0 0 0	94 0 10	0 23 9	73 25 0
Growth Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Initial Bse:	0 0 0	94 0 10	0 23 9	73 25 0
Added Vol:	0 0 0	0 66 0	0 0 0	0 0 0
PasserByVol:	0 0 0	0 0 0	0 0 0	0 0 0
Initial Fut:	0 0 0	94 66 10	0 23 9	73 25 0
User Adj:	1.31 1.31 1.31	1.31 1.31 1.31	1.31 1.31 1.31	1.31 1.31 1.31
PHF Adj:	0.88 0.88 0.88	0.88 0.88 0.88	0.88 0.88 0.88	0.88 0.88 0.88
PHF Volume:	0 0 0	140 98 15	0 34 13	108 37 0
Reduct Vol:	0 0 0	0 0 0	0 0 0	0 0 0
FinalVolume:	0 0 0	140 98 15	0 34 13	108 37 0
Critical Gap Module:				
Critical Gp:	xxxxx xxxx xxxxx	6.4 6.5 6.2	xxxxx xxxx xxxxx	4.1 xxxx xxxxx
FollowUpTim:	xxxxx xxxx xxxxx	3.5 4.0 3.3	xxxxx xxxx xxxxx	2.2 xxxx xxxxx
Capacity Module:				
Cnflict Vol:	xxxx xxxx xxxxx	295 302 37	xxxx xxxx xxxxx	48 xxxx xxxxx
Potent Cap.:	xxxx xxxx xxxxx	700 614 1041	xxxx xxxx xxxxx	1573 xxxx xxxxx
Move Cap.:	xxxx xxxx xxxxx	661 569 1041	xxxx xxxx xxxxx	1573 xxxx xxxxx
Volume/Cap:	xxxx xxxx xxxx	0.21 0.17 0.01	xxxx xxxx xxxx	0.07 xxxx xxxx
Level Of Service Module:				
2Way95thQ:	xxxx xxxx xxxxx	xxxx xxxx 0.0	xxxx xxxx xxxxx	0.2 xxxx xxxxx
Control Del:	xxxxx xxxx xxxxx	xxxxx xxxx 8.5	xxxxx xxxx xxxxx	7.5 xxxx xxxxx
LOS by Move:	* * *	* * A	* * *	A * *
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx xxxx xxxxx	620 xxxx xxxxx	xxxx xxxx xxxxx	xxxx xxxx xxxxx
SharedQueue:	xxxxx xxxx xxxxx	1.8 xxxx xxxxx	xxxxx xxxx xxxxx	0.2 xxxx xxxxx
Shrd ConDel:	xxxxx xxxx xxxxx	14.4 xxxx xxxxx	xxxxx xxxx xxxxx	7.5 xxxx xxxxx
Shared LOS:	* * *	B * *	* * *	A * *
ApproachDel:	xxxxxx	14.0	xxxxxx	xxxxxx
ApproachLOS:	*	B	*	*

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Highway 101 sb at Lytton Springs Road

Average Delay (sec/veh): 13.2 Worst Case Level Of Service: D[27.2]

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Rights:	Include	Include	Include	Include
Lanes:	0 0 0 0 0	0 1 0 0 1	0 0 0 1 0	0 1 0 0 0
Volume Module:				
Base Vol:	0 0 0	68 0 5	0 43 38	148 26 0
Growth Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Initial Bse:	0 0 0	68 0 5	0 43 38	148 26 0
Added Vol:	0 0 0	0 84 0	0 0 0	0 0 0
PasserByVol:	0 0 0	0 0 0	0 0 0	0 0 0
Initial Fut:	0 0 0	68 84 5	0 43 38	148 26 0
User Adj:	1.31 1.31 1.31	1.31 1.31 1.31	1.31 1.31 1.31	1.31 1.31 1.31
PHF Adj:	0.88 0.88 0.88	0.88 0.88 0.88	0.88 0.88 0.88	0.88 0.88 0.88
PHF Volume:	0 0 0	101 125 7	0 64 56	220 39 0
Reduct Vol:	0 0 0	0 0 0	0 0 0	0 0 0
FinalVolume:	0 0 0	101 125 7	0 64 56	220 39 0
Critical Gap Module:				
Critical Gp:	xxxxx xxxx xxxxx	6.4 6.5 6.2	xxxxx xxxx xxxxx	4.1 xxxx xxxxx
FollowUpTim:	xxxxx xxxx xxxxx	3.5 4.0 3.3	xxxxx xxxx xxxxx	2.2 xxxx xxxxx
Capacity Module:				
Cnflict Vol:	xxxx xxxx xxxxx	570 599 39	xxxx xxxx xxxxx	120 xxxx xxxxx
Potent Cap.:	xxxx xxxx xxxxx	486 418 1039	xxxx xxxx xxxxx	1480 xxxx xxxxx
Move Cap.:	xxxx xxxx xxxxx	423 347 1039	xxxx xxxx xxxxx	1480 xxxx xxxxx
Volume/Cap:	xxxx xxxx xxxx	0.24 0.36 0.01	xxxx xxxx xxxx	0.15 xxxx xxxx
Level Of Service Module:				
2Way95thQ:	xxxx xxxx xxxxx	xxxx xxxx 0.0	xxxx xxxx xxxxx	0.5 xxxx xxxxx
Control Del:	xxxxx xxxx xxxxx	xxxxx xxxx 8.5	xxxxx xxxx xxxxx	7.9 xxxx xxxxx
LOS by Move:	* * *	* * A	* * *	A * *
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx xxxx xxxxx	377 xxxx xxxxx	xxxx xxxx xxxxx	xxxx xxxx xxxxx
SharedQueue:	xxxxx xxxx xxxxx	3.7 xxxx xxxxx	xxxxx xxxx xxxxx	0.5 xxxx xxxxx
Shrd ConDel:	xxxxx xxxx xxxxx	27.8 xxxx xxxxx	xxxxx xxxx xxxxx	7.9 xxxx xxxxx
Shared LOS:	* * *	D * *	* * *	A * *
ApproachDel:	xxxxxx	27.2	xxxxxx	xxxxxx
ApproachLOS:	*	D	*	*

Note: Queue reported is the number of cars per lane.

```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      6.2      Worst Case Level Of Service: B[ 14.6]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:        Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14    0  100     0    0    0     8  116    0     0   78   72
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   14    0  100     0    0    0     8  116    0     0   78   72
Added Vol:      0   84    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:   14   84  100     0    0    0     8  116    0     0   78   72
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:    21  125  149     0    0    0    12  172    0     0  116  107
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:   21  125  149     0    0    0    12  172    0     0  116  107
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  365  419  172  xxxx xxxx xxxxx   223 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  638  528  876  xxxx xxxx xxxxx  1358 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    634  524  876  xxxx xxxx xxxxx  1358 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.03 0.24 0.17  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     A    *    *     *    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  668 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.3 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 14.6 xxxxx xxxxx xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B    *     *    *    *     A    *    *     *    *    *
ApproachDel:      14.6           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        B              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Highway 101 nb at Lytton Springs Road
********************************************************************************
Average Delay (sec/veh):      6.2      Worst Case Level Of Service: C[ 16.2]
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:        Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:      40    0   95     0    0    0    17   93    0     0  140   98
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   40    0   95     0    0    0    17   93    0     0  140   98
Added Vol:      0   66    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:   40   66   95     0    0    0    17   93    0     0  140   98
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:    59   98  141     0    0    0    25  138    0     0  208  146
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:   59   98  141     0    0    0    25  138    0     0  208  146
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5  6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0  3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  469  542  138  xxxx xxxx xxxxx   354 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  556  450  916  xxxx xxxx xxxxx  1216 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    547  441  916  xxxx xxxx xxxxx  1216 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.11 0.22 0.15  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     A    *    *     *    *    *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  615 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.7 xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 16.2 xxxxx xxxxx xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C    *     *    *    *     A    *    *     *    *    *
ApproachDel:      16.2           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        C              *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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-----------------------------------------------------------------------------

                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Average Delay (sec/veh):      9.6       Worst Case Level Of Service: B[ 11.7]
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135    0     0     0    0    15    21    0   185     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135    0     0     0    0    15    21    0   185     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  135    0     0     0    0    15    21    0   185     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   201    0     0     0    0    22    31    0   275     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  201    0     0     0    0    22    31    0   275     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   22 xxxx xxxxx  xxxx xxxx xxxxx   401  401     0  xxxx xxxx xxxxx
Potent Cap.: 1606 xxxx xxxxx  xxxx xxxx xxxxx   609  541   900  xxxx xxxx xxxxx
Move Cap.:   1606 xxxx xxxxx  xxxx xxxx xxxxx   551  473   900  xxxx xxxx xxxxx
Volume/Cap:  0.12 xxxx  xxxx  xxxx xxxx  xxxx  0.06 0.00  0.31  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.4 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  845 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.7 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.7 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            11.7            xxxxxx
ApproachLOS:        *                *                B                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
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                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #6 Healdsburg Avenue at Lytton Springs Road
*****************************************************************************
Average Delay (sec/veh):      9.2       Worst Case Level Of Service: B[ 12.0]
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  0   0  0  0  0  1   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     214    0     0     0    0    24    18    0   170     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  214    0     0     0    0    24    18    0   170     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  214    0     0     0    0    24    18    0   170     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:   318    0     0     0    0    36    27    0   253     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  318    0     0     0    0    36    27    0   253     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   36 xxxx xxxxx  xxxx xxxx xxxxx   636  636     0  xxxx xxxx xxxxx
Potent Cap.: 1588 xxxx xxxxx  xxxx xxxx xxxxx   445  398   900  xxxx xxxx xxxxx
Move Cap.:   1588 xxxx xxxxx  xxxx xxxx xxxxx   377  318   900  xxxx xxxx xxxxx
Volume/Cap:  0.20 xxxx  xxxx  xxxx xxxx  xxxx  0.07 0.00  0.28  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.7 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  794 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.6 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.0 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            12.0            xxxxxx
ApproachLOS:        *                *                B                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
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                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
***************************************************************************
Average Delay (sec/veh):      5.8      Worst Case Level Of Service: B[ 10.3]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   118   153    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   118   153    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     0    0   118   153    0     0     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     0    0   175   227    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     0    0   175   227    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.25 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            10.3            xxxxxx
ApproachLOS:        *                *                B                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #12 Geyserville Avenue at Banti Lane
***************************************************************************
Average Delay (sec/veh):      5.0      Worst Case Level Of Service: B[ 10.5]
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  1    1  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   185   168    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0   185   168    0     0     0    0     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     0    0   185   168    0     0     0    0     0
User Adj:    1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     0    0     0     0    0   275   250    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0     0    0   275   250    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.28 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.1 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            10.5            xxxxxx
ApproachLOS:        *                *                B                *
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
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--------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      7.1      Worst Case Level Of Service: B[ 11.7]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       6    0   130    0    0     0    2   23     0    0  117     1
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    6    0   130    0    0     0    2   23     0    0  117     1
Added Vol:      0   84     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    6   84   130    0    0     0    2   23     0    0  117     1
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     9  125   193    0    0     0    3   34     0    0  174     1
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    9  125   193    0    0     0    3   34     0    0  174     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  215  215    34  xxxx xxxx xxxxx   175 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  778  686  1045  xxxx xxxx xxxxx  1413 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    777  684  1045  xxxx xxxx xxxxx  1413 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.01 0.18  0.18  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *    *    *     *    A    *     *    *    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  863 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.8 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 11.7 xxxxx xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *    *    *     *    A    *     *    *    *     *
ApproachDel:       11.7            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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--------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #13 Highway 101 nb ramp at Geyserville Avenue
********************************************************************************
Average Delay (sec/veh):      6.2      Worst Case Level Of Service: B[ 12.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 17 May 2007 <<
Base Vol:       8    0   142    0    0     0    7   26     0    0  182     3
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    8    0   142    0    0     0    7   26     0    0  182     3
Added Vol:      0   66     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    8   66   142    0    0     0    7   26     0    0  182     3
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:    12   98   211    0    0     0   10   39     0    0  270     4
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   12   98   211    0    0     0   10   39     0    0  270     4
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  332  334    39  xxxx xxxx xxxxx   275 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  667  589  1039  xxxx xxxx xxxxx  1300 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    663  585  1039  xxxx xxxx xxxxx  1300 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.02 0.17  0.20  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *    *    *     *    A    *     *    *    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  825 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.9 xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 12.1 xxxxx xxxxx xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    B     *    *    *     *    A    *     *    *    *     *
ApproachDel:       12.1            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         B                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Average Delay (sec/veh): 8.8 Worst Case Level Of Service: C[15.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 0	1!	0 0	0 0	0	1 0	0 1	0	0 0
Volume Module: >> Count Date: 17 May 2007 <<												
Base Vol:	0	0	0	20	0	8	0	23	6	120	23	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	20	0	8	0	23	6	120	23	0
Added Vol:	0	0	0	0	66	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	20	66	8	0	23	6	120	23	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	30	98	12	0	34	9	178	34	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	30	98	12	0	34	9	178	34	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	429	434	34	xxxx	xxxx	xxxxx	43	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	586	518	1045	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	530	453	1045	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.06	0.22	0.01	xxxx	xxxx	xxxx	0.11	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	492	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	1.2	xxxxx	xxxxx	xxxx	xxxxx	0.4	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	15.2	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	*	*	*	C	*	*	*	*	A	*	*
ApproachDel:		xxxxxx			15.2			xxxxxx			xxxxxx	
ApproachLOS:		*			C			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 Highway 101 sb ramp at Geyserville Avenue

Average Delay (sec/veh): 10.1 Worst Case Level Of Service: C[21.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 0	1!	0 0	0 0	0	1 0	0 1	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	4	0	4	0	27	2	170	37	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	4	0	4	0	27	2	170	37	0
Added Vol:	0	0	0	0	84	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	4	84	4	0	27	2	170	37	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	6	125	6	0	40	3	253	55	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	6	125	6	0	40	3	253	55	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	602	603	55	xxxx	xxxx	xxxxx	43	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	466	416	1018	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	399	338	1018	xxxx	xxxx	xxxxx	1579	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.37	0.01	xxxx	xxxx	xxxx	0.16	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	351	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	1.8	xxxxx	xxxxx	xxxx	xxxxx	0.6	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	21.7	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
Shared LOS:	*	*	*	*	C	*	*	*	*	A	*	*
ApproachDel:		xxxxxx			21.7			xxxxxx			xxxxxx	
ApproachLOS:		*			C			*			*	

Note: Queue reported is the number of cars per lane.

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                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*******************************************************************************
Average Delay (sec/veh):      0.7       Worst Case Level Of Service: B[ 10.4]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  153    0     0  118    0     0    0    0    10    0    10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  153    0     0  118    0     0    0    0    10    0    10
Added Vol:      0    0    0     0    0    0     0    0    0     0    0     0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0     0
Initial Fut:    0  153    0     0  118    0     0    0    0    10    0    10
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0  227    0     0  175    0     0    0    0    15    0    15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0     0
FinalVolume:    0  227    0     0  175    0     0    0    0    15    0    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   403  403   227
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540   817
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   608  540   817
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.02 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  697 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.4 xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            10.4
ApproachLOS:        *                *                *                B
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
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                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #15 Geyserville Avenue at Hamilton Lane
*******************************************************************************
Average Delay (sec/veh):      0.6       Worst Case Level Of Service: B[ 11.0]
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1  0  0   0  0  1  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  168    0     0  185    0     0    0    0    10    0    10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  168    0     0  185    0     0    0    0    10    0    10
Added Vol:      0    0    0     0    0    0     0    0    0     0    0     0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0     0
Initial Fut:    0  168    0     0  185    0     0    0    0    10    0    10
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0  250    0     0  275    0     0    0    0    15    0    15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0     0
FinalVolume:    0  250    0     0  275    0     0    0    0    15    0    15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   524  524   250
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   517  461   794
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   517  461   794
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.03 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  626 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.0 xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    B     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            11.0
ApproachLOS:        *                *                *                B
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #16 Highway 101 sb ramp at Canyon Road

Average Delay (sec/veh): 6.1 Worst Case Level Of Service: B[12.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	75	0	6	0	22	31	17	48	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	75	0	6	0	22	31	17	48	0
Added Vol:	0	0	0	0	0	0	0	0	0	66	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	75	0	6	0	22	31	83	48	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	111	0	9	0	33	46	123	71	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	111	0	9	0	33	46	123	71	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	374	397	71	xxxx	xxxx	xxxxx	79	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	631	544	997	xxxx	xxxx	xxxxx	1532	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	590	497	997	xxxx	xxxx	xxxxx	1532	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.19	0.00	0.01	xxxx	xxxx	xxxx	0.08	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	608	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	12.4	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			12.4			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #16 Highway 101 sb ramp at Canyon Road

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: B[13.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	36	0	4	0	58	53	16	62	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	36	0	4	0	58	53	16	62	0
Added Vol:	0	0	0	0	0	0	0	0	0	84	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	36	0	4	0	58	53	100	62	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	53	0	6	0	86	79	149	92	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	53	0	6	0	86	79	149	92	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	515	554	92	xxxx	xxxx	xxxxx	165	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	524	443	971	xxxx	xxxx	xxxxx	1426	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	478	393	971	xxxx	xxxx	xxxxx	1426	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.11	0.00	0.01	xxxx	xxxx	xxxx	0.10	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	504	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	13.1	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	*	*	*	A	*	*
ApproachDel:	xxxxxx			13.1			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #17 Highway 101 nb ramp at Canyon Road

Average Delay (sec/veh): 4.4 Worst Case Level Of Service: B[10.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	29	0	40	0	0	0	13	93	0	0	42	33
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	29	0	40	0	0	0	13	93	0	0	42	33
Added Vol:	0	0	84	0	0	0	0	0	0	0	66	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	29	0	124	0	0	0	13	93	0	0	108	33
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	43	0	184	0	0	0	19	138	0	0	160	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	43	0	184	0	0	0	19	138	0	0	160	49
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	362	386	138	xxxx	xxxx	xxxxx	209	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	641	551	916	xxxx	xxxx	xxxxx	1373	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	634	543	916	xxxx	xxxx	xxxxx	1373	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.07	0.00	0.20	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	845	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.1	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.8	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	*	*	*
ApproachDel:		10.8			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #17 Highway 101 nb ramp at Canyon Road

Average Delay (sec/veh): 4.1 Worst Case Level Of Service: B[11.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	28	3	58	0	0	0	24	75	0	0	44	80
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	28	3	58	0	0	0	24	75	0	0	44	80
Added Vol:	0	0	66	0	0	0	0	0	0	0	84	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	28	3	124	0	0	0	24	75	0	0	128	80
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	42	4	184	0	0	0	36	111	0	0	190	119
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	42	4	184	0	0	0	36	111	0	0	190	119
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	432	492	111	xxxx	xxxx	xxxxx	309	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	584	481	947	xxxx	xxxx	xxxxx	1263	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	571	467	947	xxxx	xxxx	xxxxx	1263	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.07	0.01	0.19	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	832	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.1	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.0	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	A	*	*	*	*	*
ApproachDel:		11.0			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.377
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	9.0
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	55	6	0	0	11	16	22	0	105	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	6	0	0	11	16	22	0	105	0	0	0
Added Vol:	0	0	0	0	0	66	84	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	55	6	0	0	11	82	106	0	105	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	82	9	0	0	16	122	157	0	156	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	9	0	0	16	122	157	0	156	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	82	9	0	0	16	122	157	0	156	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.90	0.10	0.00	0.00	0.12	0.88	0.50	0.00	0.50	0.00	0.00	0.00
Final Sat.:	625	68	0	0	96	717	417	0	414	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	xxxx	xxxx	0.17	0.17	0.38	xxxx	0.38	xxxx	xxxx	xxxx
Crit Moves:		****			****		****					
Delay/Veh:	8.6	8.6	0.0	0.0	7.9	7.9	9.6	0.0	9.6	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.6	8.6	0.0	0.0	7.9	7.9	9.6	0.0	9.6	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	A	*	A	*	*	*
ApproachDel:		8.6			7.9			9.6			xxxxxx	
Delay Adj:		1.00			1.00			1.00			xxxxx	
ApprAdjDel:		8.6			7.9			9.6			xxxxxx	
LOS by Appr:		A			A			A			*	
AllWayAvgQ:	0.1	0.1	0.1	0.2	0.2	0.2	0.6	0.6	0.6	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #18 Geyserville Avenue at Canyon Road

Cycle (sec):	100	Critical Vol./Cap.(X):	0.325
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	9.1
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	0	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	93	28	0	0	18	27	17	0	84	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	28	0	0	18	27	17	0	84	0	0	0
Added Vol:	0	0	0	0	0	84	[illegible]	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	[illegible]	0	0	0	0	0
Initial Fut:	93	28	0	0	18	111	66	0	84	0	0	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	138	42	0	0	27	165	123	0	125	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	42	0	0	27	165	123	0	125	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	42	0	0	27	165	123	0	125	0	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.77	0.23	0.00	0.00	0.14	0.86	0.50	0.00	0.50	0.00	0.00	0.00
Final Sat.:	550	166	0	0	115	707	379	0	384	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.25	0.25	xxxx	xxxx	0.23	0.23	0.33	xxxx	0.33	xxxx	xxxx	xxxx
Crit Moves:		****				****	****					
Delay/Veh:	9.3	9.3	0.0	0.0	8.4	8.4	9.5	0.0	9.5	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.3	9.3	0.0	0.0	8.4	8.4	9.5	0.0	9.5	0.0	0.0	0.0
LOS by Move:	A	A	*	*	A	A	9.5	*	A	*	*	*
ApproachDel:		9.3			8.4						xxxxxx	
Delay Adj:		1.00			1.00		A				xxxxx	
ApprAdjDel:		9.3			8.4						xxxxxx	
LOS by Appr:		A			A						*	
AllWayAvgQ:	0.3	0.3	0.3	0.3	0.3	0.3	9.5 1.00 0.4 9.5	0.4	0.4	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

A

```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:     North Bound    South Bound     East Bound      West Bound
Movement:    L  -  T  -  R  L  -  T  -  R  L  -  T  -  R  L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled    Uncontrolled     Stop Sign       Stop Sign
Rights:          Include         Include         Include         Include
Lanes:        0  0  1  0  0  0  0  1  0  0  0  0  0  0  0  0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   28     0    0   27     0    0    0     0    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   0   28     0    0   27     0    0    0     0    0    0     0
Added Vol:     0   84     0    0   66     0    0    0     0    0    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   0  112     0    0   93     0    0    0     0    0    0     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:    0  166     0    0  138     0    0    0     0    0    0     0
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   0  166     0    0  138     0    0    0     0    0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   305  305   166
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   692  612   883
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   692  612   883
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx          xxxxxx          xxxxxx
ApproachLOS:       *               *               *               *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #20 Geyserville Avevnue at Private Road
********************************************************************************
Average Delay (sec/veh):      0.0      Worst Case Level Of Service: A[  0.0]
********************************************************************************
Approach:     North Bound    South Bound     East Bound      West Bound
Movement:    L  -  T  -  R  L  -  T  -  R  L  -  T  -  R  L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled    Uncontrolled     Stop Sign       Stop Sign
Rights:          Include         Include         Include         Include
Lanes:        0  0  1  0  0  0  0  1  0  0  0  0  0  0  0  0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   45     0    0   45     0    0    0     0    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   0   45     0    0   45     0    0    0     0    0    0     0
Added Vol:     0   66     0    0   84     0    0    0     0    0    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   0  111     0    0  129     0    0    0     0    0    0     0
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:    0  165     0    0  192     0    0    0     0    0    0     0
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   0  165     0    0  192     0    0    0     0    0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   357  357   165
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   646  573   885
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   646  573   885
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    0 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx          xxxxxx          xxxxxx
ApproachLOS:       *               *               *               *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #21 Geyserville Avenue at Private Road
********************************************************************************
Average Delay (sec/veh):      3.1      Worst Case Level Of Service: A[  9.8]
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    1  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   28    0     0   27    0     0    0    0     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0   28    0     0   27    0     0    0    0     0    0    0
Added Vol:      0    0   84     0    0    0     0    0    0    66    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0   28   84     0   27    0     0    0    0    66    0    0
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0   42  125     0   40    0     0    0    0    98    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0   42  125     0   40    0     0    0    0    98    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   144 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   853 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   853 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.8 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx             9.8
ApproachLOS:        *                *                *                A
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #21 Geyserville Avenue at Private Road
********************************************************************************
Average Delay (sec/veh):      3.6      Worst Case Level Of Service: B[ 10.2]
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    1  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   45    0     0   45    0     0    0    0     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0   45    0     0   45    0     0    0    0     0    0    0
Added Vol:      0    0   66     0    0    0     0    0    0    84    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:    0   45   66     0   45    0     0    0    0    84    0    0
User Adj:    1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:     0   67   98     0   67    0     0    0    0   125    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
FinalVolume:    0   67   98     0   67    0     0    0    0   125    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   183 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   811 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   811 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.15 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.5 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.2 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     B    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            10.2
ApproachLOS:        *                *                *                B
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 32.9 Worst Case Level Of Service: F[120.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	19	0	186	0	454	9	250	96	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	19	0	186	0	454	9	250	96	0
Added Vol:	0	0	0	66	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	85	0	186	0	454	9	250	96	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	126	0	276	0	674	13	371	143	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	126	0	276	0	674	13	371	143	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1567	1573	143	xxxx	xxxx	xxxxx	688	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	124	111	910	xxxx	xxxx	xxxxx	916	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	85	66	910	xxxx	xxxx	xxxxx	916	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	1.49	0.00	0.30	xxxx	xxxx	xxxx	0.41	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.3	xxxx	xxxx	xxxxx	2.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.7	xxxxx	xxxx	xxxxx	11.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	B	*	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	85	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	361.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			120.6			xxxxxx			xxxxxx		
ApproachLOS:	*			F			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 8.9 Worst Case Level Of Service: C[21.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	15	1	280	0	414	15	79	130	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	15	1	280	0	414	15	79	130	0
Added Vol:	0	0	0	84	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	99	1	280	0	414	15	79	130	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	147	1	416	0	615	22	117	193	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	147	1	416	0	615	22	117	193	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1054	1065	193	xxxx	xxxx	xxxxx	637	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	252	224	854	xxxx	xxxx	xxxxx	956	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	229	197	854	xxxx	xxxx	xxxxx	956	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.64	0.01	0.49	xxxx	xxxx	xxxx	0.12	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	2.7	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.2	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	228	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	4.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	46.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	E	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			21.8			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

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                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      4.7      Worst Case Level Of Service: C[ 16.8]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        5    2   137     0    0     0   254  224     0     0  342    19
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     5    2   137     0    0     0   254  224     0     0  342    19
Added Vol:       0    0     0     0    0     0     0   66     0     0    0    84
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     5    2   137     0    0     0   254  290     0     0  342   103
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:      7    3   204     0    0     0   377  431     0     0  508   153
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     7    3   204     0    0     0   377  431     0     0  508   153
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1770 1847   431  xxxx xxxx xxxxx   661 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:   93   76   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     64   45   629  xxxx xxxx xxxxx   937 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.12 0.07  0.32  xxxx xxxx  xxxx  0.40 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx   1.4  xxxx xxxx xxxxx   2.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  13.4 xxxxx xxxx xxxxx  11.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     B     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:    57 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 81.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:       16.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         C                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #24 Highway 101 nb ramp at Healdsburg Avenue
*******************************************************************************
Average Delay (sec/veh):      5.4      Worst Case Level Of Service: C[ 16.7]
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  1   0  0  0  0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:        9    0   196     0    0     0   250  169     0     0  357    18
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     9    0   196     0    0     0   250  169     0     0  357    18
Added Vol:       0    0     0     0    0     0     0   84     0     0    0    66
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     9    0   196     0    0     0   250  253     0     0  357    84
User Adj:     1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31  1.31 1.31  1.31
PHF Adj:      0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     13    0   291     0    0     0   371  376     0     0  530   125
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    13    0   291     0    0     0   371  376     0     0  530   125
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1711 1774   376  xxxx xxxx xxxxx   655 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  101   84   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     70   51   675  xxxx xxxx xxxxx   942 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.19 0.00  0.43  xxxx xxxx  xxxx  0.39 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx   2.2  xxxx xxxx xxxxx   1.9 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.3 xxxxx xxxx xxxxx  11.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     B     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.:    70 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 68.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:       16.7           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         C                *                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.296
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 9.1
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0	
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	48	73	69	80	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	48	73	69	80	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	48	73	69	80	0	0	0	0	79	0	55
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	71	108	103	119	0	0	0	0	117	0	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	71	108	103	119	0	0	0	0	117	0	82
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	71	108	103	119	0	0	0	0	117	0	82
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.40	0.60	0.46	0.54	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	321	489	346	402	0	0	0	0	434	0	302
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.22	0.22	0.30	0.30	xxxx	xxxx	xxxx	xxxx	0.27	xxxx	0.27
Crit Moves:		****			****					****		
Delay/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.4	8.4	9.5	9.5	0.0	0.0	0.0	0.0	9.2	0.0	9.2
LOS by Move:	*	A	A	A	A	*	*	*	*	A	*	A
ApproachDel:		8.4			9.5			xxxxxx			9.2	
Delay Adj:		1.00			1.00			xxxxx			1.00	
ApprAdjDel:		8.4			9.5			xxxxxx			9.2	
LOS by Appr:		A			A			*			A	
AllWayAvgQ:	0.3	0.3	0.3	0.4	0.4	0.4	0.0	0.0	0.0	0.3	0.3	0.3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #31 Geyserville Avenue at Highway 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.438
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 10.2
Optimal Cycle: 0 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0	
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	77	76	55	67	0	0	0	0	112	0	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	76	55	67	0	0	0	0	112	0	107
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	76	55	67	0	0	0	0	112	0	107
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	114	113	82	100	0	0	0	0	166	0	159
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	114	113	82	100	0	0	0	0	166	0	159
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	114	113	82	100	0	0	0	0	166	0	159
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.50	0.50	0.45	0.55	0.00	0.00	0.00	0.00	0.51	0.00	0.49
Final Sat.:	0	373	368	306	373	0	0	0	0	380	0	363
Capacity Analysis Module:												
Vol/Sat:	xxxx	0.31	0.31	0.27	0.27	xxxx	xxxx	xxxx	xxxx	0.44	xxxx	0.44
Crit Moves:		****			****							
Delay/Veh:	0.0	9.5	9.5	9.7	9.7	0.0	0.0	0.0	0.0	10.9	0.0	10.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	9.5	9.5	9.7	9.7	0.0	0.0	0.0	0.0	10.9	0.0	10.9
LOS by Move:	*	A	A	A	A	*	*	*	*	B	*	B
ApproachDel:		9.5			9.7			xxxxxx			10.9	
Delay Adj:		1.00			1.00			xxxxx			1.00	
ApprAdjDel:		9.5			9.7			xxxxxx			10.9	
LOS by Appr:		A			A			*			B	
AllWayAvgQ:	0.4	0.4	0.4	0.3	0.3	0.3	0.0	0.0	0.0	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.204
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	64	2	2	5	3	33	15	25	82	7	21	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	2	2	5	3	33	15	25	82	7	21	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	2	2	5	3	33	15	25	82	7	21	3
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	95	3	3	7	4	49	22	37	122	10	31	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	3	3	7	4	49	22	37	122	10	31	4
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	95	3	3	7	4	49	22	37	122	10	31	4
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.03	0.03	0.12	0.07	0.81	0.12	0.20	0.68	0.22	0.68	0.10
Final Sat.:	706	22	22	103	62	682	109	182	596	177	530	76
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.13	0.07	0.07	0.07	0.20	0.20	0.20	0.06	0.06	0.06
Crit Moves:	****				****			****			****	
Delay/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	8.3	8.3	7.3	7.3	7.3	7.9	7.9	7.9	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.3			7.3			7.9			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.3			7.3			7.9			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #32 River Road/Moody Lane/State Route 128

Cycle (sec): 100 Critical Vol./Cap.(X): 0.352
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 9.2
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	165	5	4	0	2	33	27	19	89	3	40	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	5	4	0	2	33	27	19	89	3	40	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	165	5	4	0	2	33	27	19	89	3	40	2
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	245	7	6	0	3	49	40	28	132	4	59	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	245	7	6	0	3	49	40	28	132	4	59	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	245	7	6	0	3	49	40	28	132	4	59	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.03	0.02	0.00	0.06	0.94	0.20	0.14	0.66	0.07	0.89	0.04
Final Sat.:	696	21	17	0	45	743	157	110	516	46	618	31
Capacity Analysis Module:												
Vol/Sat:	0.35	0.35	0.35	xxxx	0.07	0.07	0.26	0.26	0.26	0.10	0.10	0.10
Crit Moves:		****			****		****					****
Delay/Veh:	10.1	10.1	10.1	0.0	7.5	7.5	8.7	8.7	8.7	8.3	8.3	8.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.1	10.1	10.1	0.0	7.5	7.5	8.7	8.7	8.7	8.3	8.3	8.3
LOS by Move:	B	B	B	*	A	A	A	A	A	A	A	A
ApproachDel:		10.1			7.5			8.7			8.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.1			7.5			8.7			8.3	
LOS by Appr:		B			A			A			A	
AllWayAvgQ:	0.5	0.5	0.5	0.1	0.1	0.1	0.3	0.3	0.3	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*****************************************************************************
Average Delay (sec/veh):      3.3       Worst Case Level Of Service: B[ 13.5]
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   1  0  0  0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0  104    0     0    4  116     0    0  132    77
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0  104    0     0    4  116     0    0  132    77
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0  104    0     0    4  116     0    0  132    77
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0  154    0     0    6  172     0    0  196   114
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0  154    0     0    6  172     0    0  196   114
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   437 xxxx xxxxx   310 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   580 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   578 xxxx xxxxx  1261 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.27 xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   1.1 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  13.5 xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     *     A    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     A    *     *     *    *     *
ApproachDel:      xxxxxx            13.5            xxxxxx           xxxxxx
ApproachLOS:        *                 B               *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #34 Lytton Station Road at Alexander Valley Road
*****************************************************************************
Average Delay (sec/veh):      2.5       Worst Case Level Of Service: C[ 16.3]
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 15 May 2007 <<
Base Vol:       0    0     0   82    0     5    5   92     0    0  250   158
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     0   82    0     5    5   92     0    0  250   158
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    0    0     0   82    0     5    5   92     0    0  250   158
User Adj:    1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31 1.31 1.31  1.31
PHF Adj:     0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88
PHF Volume:     0    0     0  122    0     7    7  137     0    0  371   235
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:    0    0     0  122    0     7    7  137     0    0  371   235
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   640  640   489   606 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   443  396   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   440  393   583   982 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.28 0.00  0.01  0.01 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  446 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  1.2 xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 16.3 xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    C     *     A    *     *     *    *     *
ApproachDel:      xxxxxx            16.3            xxxxxx           xxxxxx
ApproachLOS:        *                 C               *                *
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project

Scenario: AM Peak Hour Mitigated

Command:	AM Peak Hour 2
Volume:	AM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM Peak Hour 2
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	AM Peak Hour 2

Dowling Associates, Inc.

Scenario Report

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Scenario Report

Scenario: PM Peak Hour Mitigated

Command:	PM Peak Hour 2
Volume:	PM Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM Peak Hour 2
Trip Distribution:	Syar Mining
Paths:	Default Path
Routes:	Default Route
Configuration:	PM Peak Hour 2

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Generation Report

Forecast for AM Peak Hour 2

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2	Route 2	150.00	Syar Mining Pe	0.56	0.44	84	66	150	100.0
2	Route 2	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
	Zone 2 Subtotal					84	66	150	100.0
3	Route 3	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
3	Route 3	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
4	Route 4	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
4	Route 4	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
5	Route 5	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
5	Route 5	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
678	Route 6,7,8	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
678	Route 6,7,8	0.00	Syar Mining Pe	0.56	0.44	0	0	0	0.0
TOTAL						84	66	150	100.0

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Generation Report

Forecast for PM Peak Hour 2

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2	Route 2	150.00	Syar Mining Pe	0.44	0.56	66	84	150	100.0
2	Route 2	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
	Zone 2 Subtotal					66	84	150	100.0
3	Route 3	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
3	Route 3	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
4	Route 4	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
4	Route 4	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
5	Route 5	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
5	Route 5	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
678	Route 6,7,8	150.00	Syar Mining Pe	0.00	0.00	0	0	0	0.0
678	Route 6,7,8	0.00	Syar Mining Pe	0.44	0.56	0	0	0	0.0
TOTAL						66	84	150	100.0

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Trip Distribution Report

Percent Of Trips Site to Plant

Zone	To Gates 1
2	100.0
3	100.0
4	100.0
5	100.0
678	100.0

Syar Mining Traffic Assessment

AM Peak Hour - 6-14-07 - No Project

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	19	0	186	0	454	9	250	96	0	1014
Added	0	0	0	66	0	0	0	0	0	0	0	0	66
Total	0	0	0	85	0	186	0	454	9	250	96	0	1080

Dowling Associates, Inc.

Turning Movement Report

AM Peak Hour 2

Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Turning Movement Report

PM Peak Hour 2

Volume Type	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Total Volume
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	0	0	15	1	280	0	414	15	79	130	0	934
Added	0	0	0	84	0	0	0	0	0	0	0	0	84
Total	0	0	0	99	1	280	0	414	15	79	130	0	1018

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
AM Peak Hour 2

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	259	259	205	0	205	463	282	745	346	473	819	2028
Added	0	0	0	66	0	66	0	0	0	0	66	66	132
Total	0	259	259	271	0	271	463	282	745	346	539	885	2160

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Link Volume Report
PM Peak Hour 2

Volume Type	NB Link In	NB Link Out	NB Link Total	SB Link In	SB Link Out	SB Link Total	EB Link In	EB Link Out	EB Link Total	WB Link In	WB Link Out	WB Link Total	Total Volume
#23 Highway 101 sb ramp at Healdsubrg Avenue													
Base	0	95	95	296	0	296	429	410	839	209	429	638	1868
Added	0	0	0	84	0	84	0	0	0	0	84	84	168
Total	0	95	95	380	0	380	429	410	839	209	513	722	2036

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 23 Highway 101 sb ramp at Healdsu	A	7.5	0.000	A	8.2	0.000	+ 0.000 V/C

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Impact Analysis Report

Level Of Service

LOS Veh
Del/

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 23 Highway 101 sb ramp at Healdsu	A	3.9	0.000	A	4.0	0.000	+ 0.000 V/C

Intersection	Base Met	Future Met [Del / Vol]

Syar Mining Traffic Assessment
AM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.
Signal Warrant Summary Report

[Del / Vol]

Syar Mining Traffic Assessment
PM Peak Hour - 6-14-07 - No Project
Dowling Associates, Inc.

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]

AM Peak Hour Mitigated   Mon Dec 29, 2008 10:34:13   Page 9-1

Syar Mining Traffic Assessment

Level Of Service Computation Report

FHWA Roundabout Method (Future Volume Alternative)

Dowling Associates, Inc.

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 8.2   Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Yield Sign			Yield Sign			Yield Sign			Yield Sign		
Lanes:	0			2			1			1		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	19	0	186	0	454	9	250	96	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	19	0	186	0	454	9	250	96	0
Added Vol:	0	0	0	66	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	85	0	186	0	454	9	250	96	0
User Adj:	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	126	0	276	0	674	13	371	143	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	126	0	276	0	674	13	371	143	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	126	0	276	0	674	13	371	143	0
PCE Module:												
AutoPCE:	0	0	0	126	0	276	0	674	13	371	143	0
TruckPCE:	0	0	0	0	0	0	0	0	0	0	0	0
ComboPCE:	0	0	0	0	0	0	0	0	0	0	0	0
BicyclePCE:	0	0	0	0	0	0	0	0	0	0	0	0
AdjVolume:	0	0	0	126	0	276	0	674	13	371	143	0
Delay Module: >> Time Period: 0.25 hours <<												
CircVolume:	801			514			498			0		
MaxVolume:	xxxxxx			2054			931			1200		
PedVolume:	0			0			0			0		
AdjMaxVol:	xxxxxx			2054			931			1200		
ApproachVol:	xxxxxx			403			688			514		
ApproachDel:	xxxxxx			2.2			13.9			5.2		
Queue:	xxxx			0.7			6.9			2.2		

PM Peak Hour Mitigated   Mon Dec 29, 2008 10:34:15   Page 9-1

Syar Mining Traffic Assessment

PM Peak Hour - 6-14-07 - No Project

Dowling Associates, Inc.

Level Of Service Computation Report

FHWA Roundabout Method (Future Volume Alternative)

Intersection #23 Highway 101 sb ramp at Healdsubrg Avenue

Average Delay (sec/veh): 4.0   Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Yield Sign			Yield Sign			Yield Sign			Yield Sign		
Lanes:	0			2						1		
Volume Module: >> Count Date: 15 May 2007 <<												
Base Vol:	0	0	0	15	1	280		414	15	79	130	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	15	1	280	0	414	15	79	130	0
Added Vol:	0	0	0	84	0	0		0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	99	1	280	0	414	15	79	130	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	113	1	318	0	470	17	90	148	0
Reduct Vol:	0	0	0	0	0	0		0	0	0	0	0
Reduced Vol:	0	0	0	113	1	318	0	470	17	90	148	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	113	1	318	0	470	17	90	148	0
PCE Module:												
AutoPCE:	0	0	0	113	1	318	0	470	17	90	148	0
TruckPCE:	0	0	0	0	0	0		0	0	0	0	0
ComboPCE:	0	0	0	0	0	0	0	0	0	0	0	0
BicyclePCE:	0	0	0	0	0	0	0	0	0	0	0	0
AdjVolume:	0	0	0	113	1	318	0	470	17	90	148	0
Delay Module: >> Time Period: 0.25 hours <<												
CircVolume:	583			238			203			0		
MaxVolume:	xxxxxx			2253			1090			1200		
PedVolume:	0			0			0			0		
AdjMaxVol:	xxxxxx			2253			1090			1200		
ApproachVol:	xxxxxx			432			488			238		
ApproachDel:	xxxxxx			2.0			5.9			3.7		
Queue:	xxxx			0.7			2.4			0.7		

APPENDIX H

AIR QUALITY ANALYSIS

Sonoma In-Stream Mining Worst-Case Operation-Related Emissions

Exhaust Emissions of ROG, NOx, CO, and PM10

Worker Commute Emissions

	Values	
Miles/One-Way Trip	20.00	Default Model Setting (Dowden 2007)
One-way trips/Day	20.00	5 workers, traveling 4 20-mile oneway trips per day
Total Miles/Day	400.00	
Day/Year	110.00	5 month construction period, 22 work days/month

See Section 3.6, Traffic and Circulation

	ROG*	NOx*	CO*	PM10*	CO2e^	CO2**^	CH4***^	N20***^
Emission rate (grams/mile)	0.24	0.44	5.10	0.04			0.05	0.04
Emission rate (grams/trip)	1.37	0.62	13.67	0.02				
Pounds per Day	0.27	0.41	5.10	0.04			0.04	0.04
Tons per Year	**0.01**	**0.02**	**0.28**	**0.00**	**62.47**	**61.88**	**0.00**	**0.00**

*Based on EMFAC emission factors for as contained in the Construction Emissions Model (SMAQMD 2006).
**Based on EMFAC emission factors as contained in URBEMIS 2007 Verions 9.2.0 (Rimpo 2007).
***Emission Factors from CCAR General Reporting Protocol V3.0

Off-Site, On-Road Material Transport Emissions

User Input	Material Transport	
Miles/One-Way Trip	12.10	350000 tons of material, 14,000 truck loads of 25 tons, 28,000 one-way trips/year, 12.1miles/one-way trip, 338,800 total miles/year. 12.1 miles is based on paved travel between the Syar processing plant in Hea
One-way trips/Year	28000.00	
Vehicle Miles Traveled/Year (calculated)	338800.00	

	ROG*	NOx*	CO*	PM10*	CO2e^	CO2**^	CH4***^	N20***^
Emission rate (grams/mile)	0.65	7.23	6.11	0.24			0.08	0.05
Pounds per Year	485.07	5395.43	4559.62	179.10			59.70	37.31
Tons per Year	**0.24**	**2.70**	**2.28**	**0.09**	**622.14**	**616.32**	**0.03**	**0.02**

*Based on EMFAC emission factors for heavy-duty trucks as contained in the Construction Emissions Model (SMAQMD 2006).
**Based on EMFAC emission factors as contained in URBEMIS 2007 Verions 9.2.0 (Rimpo 2007).
***Emission Factors from CCAR General Reporting Protocol V3.0
^ Metric Tonnes

On-Site, Off-Road Heavy-Duty Equipment Emissions

Number of Vehicles	Type	ROG*	NOx*	CO*	PM10*	CO2e^	CO2**	CH4****	N20****	HP	Usage	Hrs/Day	ROG (g/hr)	CO	Nox	Sox
1	Motor Grader	0.4	4.3	1.2	0.2	575.6	413.1	0.8	0.5	250.00	0.48	5.00	79.86	223.50	813.04	0.88
1	Dozer	0.8	6.9	3.8	0.3	736.1	573.6	0.8	0.5	401.00	0.54	5.00	131.47	630.97	1,165.30	0.95
1	Front End Loader	1.0	10.7	3.3	0.4	1520.8	1358.3	0.8	0.5	458.00	0.43	10.00	109.32	352.61	1,132.69	1.61
1	Off-Highway Trucks	1.1	10.1	3.3	0.4	1352.2	1189.7	0.8	0.5	479.00	0.57	8.00	108.27	327.28	1,007.96	1.16
1	Fuel and Lube Truck	0.3	2.5	0.8	0.1	459.9	297.4	0.8	0.5	479.00	0.57	2.00	108.27	327.28	1,007.96	1.16
1	Water Truck	0.5	4.9	1.3	0.2	666.1	503.6	0.8	0.5	189.00	0.50	8.00	56.22	147.37	554.49	0.64
1	Crane***	0.0	0.1	0.0	0.0	173.7	11.2	0.8	0.5	399.00	0.43	0.18	65.88	239.27	641.31	0.64
	Pounds per Day	3.33	32.11	11.57	1.22	5484.44										
	Tons per Year	**0.18**	**1.77**	**0.64**	**0.07**	**273.65**	5 month construction period, 22 work days/month									

*Based on OffRoad emission factors as contained in the Construction Emissions Model (SMAQMD 2006).
**Based on EMFAC emission factors as contained in URBEMIS 2007 Verions 9.2.0 (Rimpo 2007).
***The crane will only operate 10 days of the 110 days of operations per season
****CH4 and N2O emissions are based on emissions per ton of material moved (BAAQMD 1999 and CCAR 2008)
^ Metric Tonnes

Fugitive Emissions of PM10

(EPA 2006)

		Tons per Year PM10	
Handling and Storage	**Pounds of PM10 per Ton Removed** 0.0047	**0.42**	Includes a 50% reduction for watering as described in the project description
Wind Erosion of Piles of Material	**Grams of PM10 per Square Meter Disturbed** 6.51	**0.14**	Assumes 12 days of disturbance and 1 square meter of disturbance per ton of material and includes a 50% reduction for watering as described in the project description
Unpaved Road Hauling	**Pounds of PM10 per VMT** 3.68	**78.14**	350000 tons of material, 14,000 truck loads of 25 tons, 28,000 one-way trips/year, 3 miles/one-way trip/unpaved, 84,000 total miles/year Includes a 50% reduction for watering as described in the project descriptio Assumes roundtrip travel on unpaved roads and through gravel bars from Route 5 to Bar S-14, which provides the longest reasonably foreseeable distance possible using an alternative route.
		78.69	

*Based on an emission factor calculations from AP-42 Section 13.2.4 (Handling and Storage)
*Based on an emission factor calculations from AP-42 Section 13.2.5 (Wind Erosion of Piles of Material)
*Based on an emission factor calculations from AP-42 Section 13.2.2 (Unpaved Road Hauling)

	ROG	NOx	CO	PM10	CO2e
Total (Unmitigated)	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
	8.01	81.57	58.12	1433.56	
	tons/year	tons/year	tons/year	tons/year	tons/year
	0.44	4.49	3.20	78.85	958.26
Total (Mitigated)	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
	8.01	81.57	58.12	715.34	
	tons/year	tons/year	tons/year	tons/year	tons/year
	0.44	4.49	3.20	39.34	

Sonoma In-Stream Mining Worst-Case Operation-Related Emissions

Exhaust Emissions of ROG, NOx, CO, and PM10

Worker Commute Emissions

	Values	
Miles/One-Way Trip	20.00	Default Model Setting (Dowden 2007)
One-way trips/Day	20.00	5 workers, traveling 4 20-mile oneway trips per day
Total Miles/Day	400.00	
Day/Year	110.00	5 month construction period, 22 work days/month

See Section 3.6, Traffic and Circulation

	ROG*	NOx*	CO*	PM10*	CO2e^	CO2**^	CH4***^	N20***^
Emission rate (grams/mile)	0.24	0.44	5.10	0.04			0.05	0.04
Emission rate (grams/trip)	1.37	0.62	13.67	0.02				
Pounds per Day	0.27	0.41	5.10	0.04			0.04	0.04
Tons per Year	**0.01**	**0.02**	**0.28**	**0.00**	**62.47**	**61.88**	**0.00**	**0.00**

*Based on EMFAC emission factors for as contained in the Construction Emissions Model (SMAQMD 2006).
**Based on EMFAC emission factors as contained in URBEMIS 2007 Verions 9.2.0 (Rimpo 2007).
***Emission Factors from CCAR General Reporting Protocol V3.0

Off-Site, On-Road Material Transport Emissions

User Input	Material Transport
Miles/One-Way Trip	12.10
One-way trips/Year	10560.00
Vehicle Miles Traveled/Year (calculated)	127776.00

132000 tons of material, 5,280 truck loads of 25 tons, 10,560 one-way trips/year, 12.1miles/one-way trip, 127,776 total miles/year. 12.1 miles is based on paved travel between the Syar processing plant in Heal

	ROG*	NOx*	CO*	PM10*	CO2e^	CO2**^	CH4***^	N20***^
Emission rate (grams/mile)	0.65	7.23	6.11	0.24			0.08	0.05
Pounds per Year	182.94	2034.85	1719.63	67.55			22.52	14.07
Tons per Year	**0.09**	**1.02**	**0.86**	**0.03**	**618.52**	**616.32**	**0.01**	**0.01**

*Based on EMFAC emission factors for heavy-duty trucks as contained in the Construction Emissions Model (SMAQMD 2006).
**Based on EMFAC emission factors as contained in URBEMIS 2007 Verions 9.2.0 (Rimpo 2007).
***Emission Factors from CCAR General Reporting Protocol V3.0
^ Metric Tonnes

On-Site, Off-Road Heavy-Duty Equipment Emissions

Number of Vehicles	Type	ROG*	NOx*	CO*	PM10*	CO2e^	CO2**	CH4****	N20****	(g/hr) HP	Usage	Hrs/Day	ROG	CO	Nox	Sox
1	Motor Grader	0.4	4.3	1.2	0.2	575.6	413.1	0.8	0.5	250.00	0.48	5.00	79.86	223.50	813.04	0.88
1	Dozer	0.8	6.9	3.8	0.3	736.1	573.6	0.8	0.5	401.00	0.54	5.00	131.47	630.97	1,165.30	0.95
1	Front End Loader	1.0	10.7	3.3	0.4	1520.8	1358.3	0.8	0.5	458.00	0.43	10.00	109.32	352.61	1,132.69	1.61
1	Off-Highway Trucks	1.1	10.1	3.3	0.4	1352.2	1189.7	0.8	0.5	479.00	0.57	8.00	108.27	327.28	1,007.96	1.16
1	Fuel and Lube Truck	0.3	2.5	0.8	0.1	459.9	297.4	0.8	0.5	479.00	0.57	2.00	108.27	327.28	1,007.96	1.16
1	Water Truck	0.5	4.9	1.3	0.2	666.1	503.6	0.8	0.5	189.00	0.50	8.00	56.22	147.37	554.49	0.64
1	Crane***	0.0	0.1	0.0	0.0	173.7	11.2	0.8	0.5	399.00	0.43	0.18	65.88	239.27	641.31	0.64
	Pounds per Day	3.33	32.11	11.57	1.22	5484.44										
	Tons per Year	**0.18**	**1.77**	**0.64**	**0.07**	**273.65** 5 month construction period, 22 work days/month										

*Based on OffRoad emission factors as contained in the Construction Emissions Model (SMAQMD 2006).
**Based on EMFAC emission factors as contained in URBEMIS 2007 Verions 9.2.0 (Rimpo 2007).
***The crane will only operate 10 days of the 110 days of operations per season
****CH4 and N2O emissions are based on emissions per ton of material moved (BAAQMD 1999 and CCAR 2008)
^ Metric Tonnes

Fugitive Emissions of PM10

(EPA 2006)

		Tons per Year PM10	
Handling and Storage	**Pounds of PM10 per Ton Removed** 0.0047	**0.16**	Includes a 50% reduction for watering as described in the project description
Wind Erosion of Piles of Material	**Grams of PM10 per Square Meter Disturbed** 6.51	**0.14**	Assumes 12 days of disturbance and 1 square meter of disturbance per ton of material and includes a 50% reduction for watering as described in the project description
Unpaved Road Hauling	**Pounds of PM10 per VMT** 3.68	**29.12**	132000 tons of material, 5,280 truck loads of 25 tons, 10,560 one-way trips/year, 3 miles/one-way trip/unpaved, 31,680 total miles/year Includes a 50% reduction for watering as described in the project descriptio Assumes roundtrip travel on unpaved roads and through gravel bars from Route 5 to Bar S-14, which provides the longest reasonably foreseeable distance possible using an alternative route.
		29.41	

*Based on an emission factor calculations from AP-42 Section 13.2.4 (Handling and Storage)
*Based on an emission factor calculations from AP-42 Section 13.2.5 (Wind Erosion of Piles of Material)
*Based on an emission factor calculations from AP-42 Section 13.2.2 (Unpaved Road Hauling)

		ROG	NOx	CO	PM10	CO2e
Total (Unmitigated)		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		5.26	51.02	32.30	536.69	
		tons/year	tons/year	tons/year	tons/year	tons/year
		0.29	2.81	1.78	29.52	954.64
Total (Mitigated)		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		5.26	51.02	32.30	267.41	
		tons/year	tons/year	tons/year	tons/year	tons/year
		0.29	2.81	1.78	14.71	

APPENDIX I

HEALTH RISK ASSESSMENT

Prepared for:
EDAW,
San Francisco, California

Health Risk Assessment to Support Environmental Impact Analysis for the Syar Alexander Valley Instream Mining, CA

AECOM Environment
January 2009
Document No.: 02450-031

AECOM

Prepared for:
EDAW
San Francisco, California

Health Risk Assessment to Support Environmental Impact Analysis for the Syar Alexander Valley Instream Mining, CA

Prepared By: Charanya Varadarajan

Reviewed By: Greg Wolffe

AECOM Environment
January 2009
Document No.: 02450-031

AECOM

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1.0 Introduction

This health risk assessment (HRA) has been performed to evaluate potential health risks from emissions from the proposed Syar Industries, Inc. (Syar)'s mining operation at the Alexander Valley in Sonoma county, California. The HRA evaluates the maximum individual cancer risk (MICR) and non-cancer acute and chronic impacts to determine the potential significance of health impacts.

This HRA is prepared in support of an environmental impact analysis required under California Environmental Quality Act (CEQA) for assessing potential impacts of Syar's request for an Aggregate Resource Management Plan (ARM Plan) amendment, Sonoma County Surface Mining and Reclamation Ordinance (SMARO) amendment, use permit and approval of a reclamation plan to mine up to 15 gravel bars along a 6.5-mile stretch of the Russian River. The proposed action would allow for continued commercial extraction of aggregate from the specified gravel bars of the Russian River within the Alexander Valley reach in Sonoma County, California.

1.1 Project Background

Syar proposes in-stream gravel mining within the Russian River located in the Alexander Valley near Healdsburg, California in northern Sonoma County. The Alexander Valley reach extends from the confluence of Big Sulphur Creek near Cloverdale (approximately 8.5 miles upstream of the study area) to the Alexander Valley Road Bridge (approximately 1.5 miles downstream of the study area). The study area includes approximately 6.5 miles of river (upstream bar to downstream bar) and is at the southern extent of the Alexander Valley, generally located southeast of Gill Creek and northwest of the Jimtown Bridge. The 6.5-mile reach of the Russian River where gravel bars are proposed to be mined is surrounded by vineyards, riparian vegetation, and scattered rural residential sites. Figure 1 shows the location of the entire study area in the context of its regional vicinity.

Syar proposes to extract sand and gravel from the site within a proposed 15-year use permit period. Mining operations would consist of relocation of large woody debris only in areas where mining would occur, removal of giant reed (Arundo donax), transplanting activities, skimming (excavation and loading of sand and gravel) activities, salvage and reuse of soil, and removal of equipment. The primary extraction method would be the horseshoe skim, with supplemental skimming methods (i.e., alcove, oxbows, floodplain skim, and effective discharge stage height), used where opportunities for habitat enhancement exist. Skimming under all methods would involve the use of mechanical equipment and would be limited to non-wetted areas. The project includes the loading of sand and gravel onto trucks and hauling to the Healdsburg processing facility. Diesel-fuel equipment will be used to perform the mining operation and to transport the gravel and sands to the processing plant. Syar proposes to conduct mining operations during the dry season from June 1st through November 1st for 100 to 110 days. The mining operations will be conducted Monday through Friday, during daylight hours only (starting from 6 a.m. and ending as late as 9:30 p.m. as daylight allows).

2.0 Health Risk Assessment Methodology

This HRA includes three quantitative determinations: hazard identification, exposure assessment and risk characterization. DPM emissions from the operation of off-road and on-road equipments were estimated using emission factors for off-road and on-road diesel engines. Exposure calculations were performed using air dispersion modeling analysis to predict ground-level air concentrations for DPM. Results of the air modeling exposure predictions were then applied with respective cancer potency factors to characterize cancer risk associated with predicted levels of exposure.

At the request of the Northern Sonoma County Air Pollution Control District (NSCAPCD), the regional air quality agency for the area of the Syar project, emission of acrolein were included in the HRA for evaluating potential short term and chronic non-cancer health impacts. Acrolein concentrations were estimated from the predicted DPM concentrations based on California Air Resources Board (CARB) reported acrolein to diesel ratio of 0.013 (CARB, 2008). The estimated acrolein concentrations were compared to existing and proposed Office of Environmental Health Hazard Assessment (OEHHA) chronic and acute reference exposure levels (REL) to determine if the project resulted in significant chronic and/or short-term acute impact.

The methods used to assess potential human health risks from the proposed project are consistent with those prepared by The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2003) which describes algorithms, exposure methods, and cancer and non-cancer health values needed to perform a HRA under the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots or AB 2588, Health and Safety Code Section 44360 et seq.). This manual is generally considered the best available reference for conducting human health risk assessment in California.

2.1 Hazard Identification

Hazard identification refers to the identification of substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or to the identification of a type of exposure as hazardous. For this proposed project, DPM designated as a Toxic Air Contaminant (TAC) by CARB in 1998 is the pollutant of concern. In 1990, the State of California administratively listed under Proposition 65 the particulates formed in the exhaust of diesel-powered equipment as a chemical known to the State to cause cancer. For estimating risks due to diesel particulate matter exhaust, the risk assessment methodology used was consistent with that employed by the CARB in the document entitled Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (ARB, 2000). Acrolein, another designated TAC and a constituent of the diesel emissions, has non-cancer chronic and short-term acute impacts and is therefore also evaluated in this HRA. The 1-hour and annual average acrolein concentrations are compared against state regulatory levels.

2.1.1 Sources of DPM Emissions

The TAC evaluated for potential health risks from operation of the proposed project is particulate emissions from off-road and on-road diesel-fueled engines. Two discrete areas of DPM sources identified for modeling include the proposed mining gravel bars and the haul roads used by trucks to transport raw materials, sand and gravel to the processing plant. Off-road diesel engines are used in the gravel bar mining operations whereas on-road heavy duty haul trucks are operated between the gravel bars and the processing facility.

DPM Emissions from Gravel Bar Mining Equipment

The equipment types and number were based on information supplied by Syar and include one motor grader, one dozer, one loader and one water truck. Daily emissions of DPM from diesel-fueled gravel bar mining equipments were quantified using Equation 1 below and are presented in Table 1. Based on Equation 1 a total DPM emission for the equipments is calculated as 1.9 lb/day.

$$\mathbf{DPM = EF1 \times HP \times T} \qquad \textbf{Eq. 1}$$

Where,

EF1 = Emission factor, gram/hp-hour
HP = Effective horsepower of equipment, HP
T = Hours of operation, hours/day

Table 1: DPM Emission - Off-road Mining

Source	PM10 Emission Factor(1)		Operating Hours per Day	DPM Emission Rate		
	lbs/day	g/day		g/s	lb/yr	lb/hr
SD-1	1.9	861.83	16.5	1.45E-02	209	1.15E-01
SD-2	1.9	861.83	16.5	1.45E-02	209	1.15E-01
SD-4	1.9	861.83	16.5	1.45E-02	209	1.15E-01
SD-5	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-4	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-5	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-6	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-7	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-8	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-9	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-10	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-11	1.9	861.83	16.5	1.45E-02	209	1.15E-01
S-12	1.9	861.83	16.5	1.45E-02	209	1.15E-01

(1) Emissions calculated based on off-road emission factor in Construction Emissions Model (Version 5.2) (Sacramento Metropolitan Air Quality Management District, SMAQMD) as provided in Draft EIR.

DPM Emissions from Haul Trucks

DPM emissions from haul trucks include both running and idling emissions as shown in Tables 2 and 3. Equations 2 and 3 below were used to estimate the DPM emissions from haul trucks:

$$DPM_{running} = EF2 \times M \times Trip \qquad \textbf{Eq. 2}$$

Where

EF2 = Emission factor, g/mile
M = Miles traveled per trip for various routes
Trip = Trips per day

$$DPM_{idling} = EF3 \times IT \times Trip \qquad \textbf{Eq. 3}$$

Where

EF3 = Emission factor, g/idling-hour (from EMFAC2007 model run)
IT = Idling Time
Trip = Trips per day

Table 2: DPM Emission - Haul Truck Running

Route No.	Length (mi.)	Emission Factor[1] (g/mi)	Trips per Day	Hours per Day	DPM Emissions		
					g/s	lb/yr	lb/hr
2A	3.38	0.24	480	12	9.03E-03	9.46E+01	7.16E-02
2B	0.21	0.24	480	12	5.47E-04	5.73E+00	4.34E-03
3	1.51	0.24	480	12	4.03E-03	4.22E+01	3.20E-02
4	0.59	0.24	480	12	1.57E-03	1.64E+01	1.24E-02
5	1.45	0.24	480	12	3.87E-03	4.06E+01	3.07E-02
6	1.36	0.24	480	12	3.64E-03	3.81E+01	2.89E-02
7	0.51	0.24	480	12	1.35E-03	1.41E+01	1.07E-02
8	0.36	0.24	480	12	9.61E-04	1.01E+01	7.63E-03

(1) Emissions calculated based on off-road emission factor in SMAQMD Construction Emissions Model (Version 5.2) as provided in Draft EIR.

Table 3: DPM Emission - Haul Truck Idling

Trips per Day	Idle Emission Factor[1] (g/s)	Idle Time Per Trip (min.)	Total Idle Time (min.)	Hours per Day	DPM Emissions		
					g/s	lb/yr	lb/hr
480	0.00048	10	4800	12	3.20E-03	3.35E+01	2.54E-02

(1) EMFAC2007 Emission Factors

Detailed emission calculations are provided in Appendix A. Because of the lack of specific acrolein emission rates in the CARB database, CARB reported acrolein to DPM ratio of 0.013 was used to estimate acrolein concentrations from the model predicted DPM concentrations (CARB 2008). The calculated DPM emission rates from Equations 1, 2 and 3 were inputs to the air dispersion model to estimate the annual ground level concentrations.

2.2 Exposure Assessment

Exposure assessment is the identification and quantification of all routes of human exposure to the substances of concern. Exposure assessment is performed using air dispersion model. The Industrial Source Complex Short Term (ISCST3) Version 02035 air dispersion model was used to determine ground-level DPM concentrations. ISCST3 was used in the rural mode with all model option switches set to regulatory-default settings. ISCST3 was used exclusively for the evaluation of cancer risk impacts from DPM emissions. Because DPM emissions were evaluated as a single pollutant in ISCST3, actual emission rates from each emission source were modeled in the dispersion analysis. As discussed earlier annual and 1-hour acrolein concentrations were estimated from model predicted DPM concentrations using CARB reported “acrolein to DPM” ratio (CARB 2008). The estimated concentrations were then compared against OEHHA’s proposed acceptable acute and chronic exposure levels.

2.2.1 Emission Source

Emission Rate

The proposed gravel bar mining is scheduled to occur in several phases. Each phase will include activities that use diesel-fueled off-road and on-road equipments and trucks that generate DPM emissions. Emission rates are determined based on methods presented in Sections 2.1.1.

Modeling Phases

Syar proposes to mine the bars in a phased manner so the skimming of the bars would occur on an approximately six-year cycle over the proposed 15-year life of the use permit. The phasing was developed to produce a maximum of 350,000 tons of sand and gravel annually. Only one, or at most two, instream bars would be skimmed in one season. Syar has identified certain bars to be skimmed during the first six phases, including bars SD-4, SD-5, S-4, S-7, S-8, S-9a, S-13, and S-14. These bars were selected because they have been identified as depositional areas, or as areas with lateral erosion issues, thus necessitating mining to remove the aggregate. Syar proposes to mine the additional eight bars if resource agencies determine that mining of these bars is necessary to meet river management goals. The phasing of the mining operations is tentative and would depend on the conditions of the bars, which would be confirmed annually prior to mining operations as part of the Adaptive Management Strategy (AMS).

For the purposes of modeling and risk calculations, six tentative phases are identified with specific emission sources in each phase as shown in Table 4. The individual emission sources within each phase are grouped together during the dispersion modeling to obtain ground level concentrations for each phase at the modeled receptors. Cancer risk is then calculated for all the six phases using the predicted annual DPM concentration to identify the worst-case mining phase.

In addition, Syar has grouped the gravel bars and associated haul routes along the 6.5 mile stretch of the Russian River into three regions (Reach 1, 2 and 3) based on their relative locations as shown in Table 5. Reach 1 contains 7 gravel bars; Reach 2 contains 6 gravel bars, and Reach 3 contains 2 gravel bars. The operations in each of the three reaches were also grouped together during dispersion modeling to predict DPM concentrations. The emissions modeled from each of group will be higher due to the assumption that all the equipments in each of the reach are operated simultaneously (which is unlikely) and therefore the each group represents a worst-case concentration and risk scenario.

Table 4: Tentative Phasing of the Gravel Bar Mining Operations			
Phase	**Emission Source**		
	Gravel Bar	**Haul Truck - Running**	**Haul Truck - Idling**
Phase 1	SD-4, SD-5	RTE2A, RTE2B	IDLE2A, IDLE2B
Phase 2	S13	RTE6	IDLE6
Phase 3	S4	RTE2A, RTE2B	IDLE2A, IDLE2B
Phase 4	S9A, S14	RTE5, RTE6	IDLE5, IDLE6
Phase 5	S8	RTE5	IDLE5
Phase 6	S7, S8	RTE5	IDLE5

Table 5: Gravel Bar Mining Area Reaches			
Phase	**Emission Source**		
	Gravel Bar	**Haul Truck Running**	**Haul Truck Idling**
Reach 1	S8, S9A, S10, S11, S12, S13, S14,	RTE6, RTE7, RTE8	IDLE6, IDLE7, IDLE8
Reach 2	S4, S5, SD-4, SD-5, S6, S7	RTE2A, RTE2B, RTE3, RTE4, RTE5	IDLE3&4, IDLE5
Reach 3	SD-1, SD-2	RTE2A, RTE2B	IDLE2A, IDLE2B

Modeling Areas

Dimensions and configuration of the areas near each bar and each haul truck route were digitized using aerial photographs. The digitized dimensions for each bar and each truck routes are inputs to the ISCST3 domain. Modeling was performed using a Universal Transverse Mercator (UTM), zone 10 NAD83 datum coordinate system.

Modeled Source Release Parameters

DPM emissions from the mining equipment exhaust and haul truck exhaust were modeled as line source represented by a string of adjacent volume sources. Haul truck idling emissions were modeled as volume sources. The vertical dimension of volume source was assumed to be 5 meters with the initial vertical dimension of the volume source calculated as the vertical dimension divided by 4.3. The release height for all the sources was assumed to at half the vertical dimension of the volume source, i.e., 2.5 meters. Because there were no point sources in the modeling analysis, no building downwash was required. Also, because all receptors are located in terrain at or below the source release height with no point sources with plume rise, elevated terrain was not applicable to the air dispersion modeling analysis. Figure 2 shows the emissions sources modeled for this HRA.

2.2.3 Terrain

Because all receptors are located in terrain at or below the source release height with no point sources with plume rise, elevated terrain was not applicable to the air dispersion modeling analysis.

2.2.4 Meteorological Data

The ISCST3 air dispersion model used in this HRA requires at least one complete year of regional sequential hourly meteorological data. The NSCAPCD recommended that meteorological data from the Healdsburg monitoring station be used in this HRA because weather patterns in Healdsburg are unique and that local meteorological data would produce the most realistic results. Meteorological data approved for use in a prior risk assessment in the area were used for this analysis. Healdsburg meteorological data was used in the emissions modeling analysis to determine the highest annual and 1-hour concentrations. A wind rose for the meteorological station for the year 1999 is presented in Figure 3.

2.2.5 Receptors

This HRA evaluated health risks to sensitive receptors (residents) near the mining areas and along the truck routes. To determine maximum impacts at actual receptor locations, sensitive receptors (residents) located within the areas from the gravel bars to the US FWY101 including truck routes were identified using aerial photographs. The shortest distance between a potential receptor and the gravel bar was 91 meters (located near Bar S9a). Figure 2 shows modeled receptors around the mining area and haul trucks routes.

2.3 Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships. Potential health impacts were determined using the estimation of dose and exposure through inhalation methods described in Section 5.4 of the OEHHA HRA Guidelines. The chief exposure assumption for cancer risk is one of continuous exposure to DPM concentrations produced by continuous emissions at the maximum emission rates over a 70-year period at each receptor location. Actual risks are not expected to be any higher than the 70-year predicted risks and are likely to be substantially lower.

Potential cancer risks due to toxic emissions from the proposed mining operations were calculated as the individual excess lifetime cancer risk. The individual excess lifetime cancer risk is a probability that, due to a lifetime exposure to the chemicals of concern, an individual may get cancer. Cancer risk is computed based on Equation 4:

$$\textbf{Risk} = \textbf{C x DBR x EF x ED x SF/AT} \qquad \textbf{Eq. 4}$$

Where

C = DPM ground-level Conc. at the receptor ug/m^3

DBR = Daily Breathing rate (L/kg BW – day)

EF = Exposure frequency – number of days per year an exposure occurs (days/yr)

ED = Exposure duration – number of years of a lifetime during which an exposure occurs (years)

SF = DPM inhalation cancer slope factor (mg/kg-day)-1

AT = Averaging time – number of days in a 70-year lifespan (days)

According to the OEHHA guidance, the risk analysis should be performed based on available site-specific data to provide an accurate estimate of risk. Since the proposed mining operation will last only 15 years, a 15-year exposure duration was used instead of the default 70-year exposure duration. In addition, since the mining operation will occur for about 110 operating days per year, this was used as the exposure frequency rather than the 350 days per year used in the Tier 1 70-yr risk analysis. Table 6 shows the parameters for the risk calculations.

Table 6: HRA Input Parameters	
Parameters	**Values**
DPM Ground-level Concentration at each receptors, ug/m^3	**Outputs from ISCST3 model**
Inhalation Rate (L/kg-BW-day)	393
Exposure frequency (days/yr)	110
Exposure duration (years)	15
DPM slope factor (mg/kg-day)-1	1.1
Days in lifetime (days)	25,550

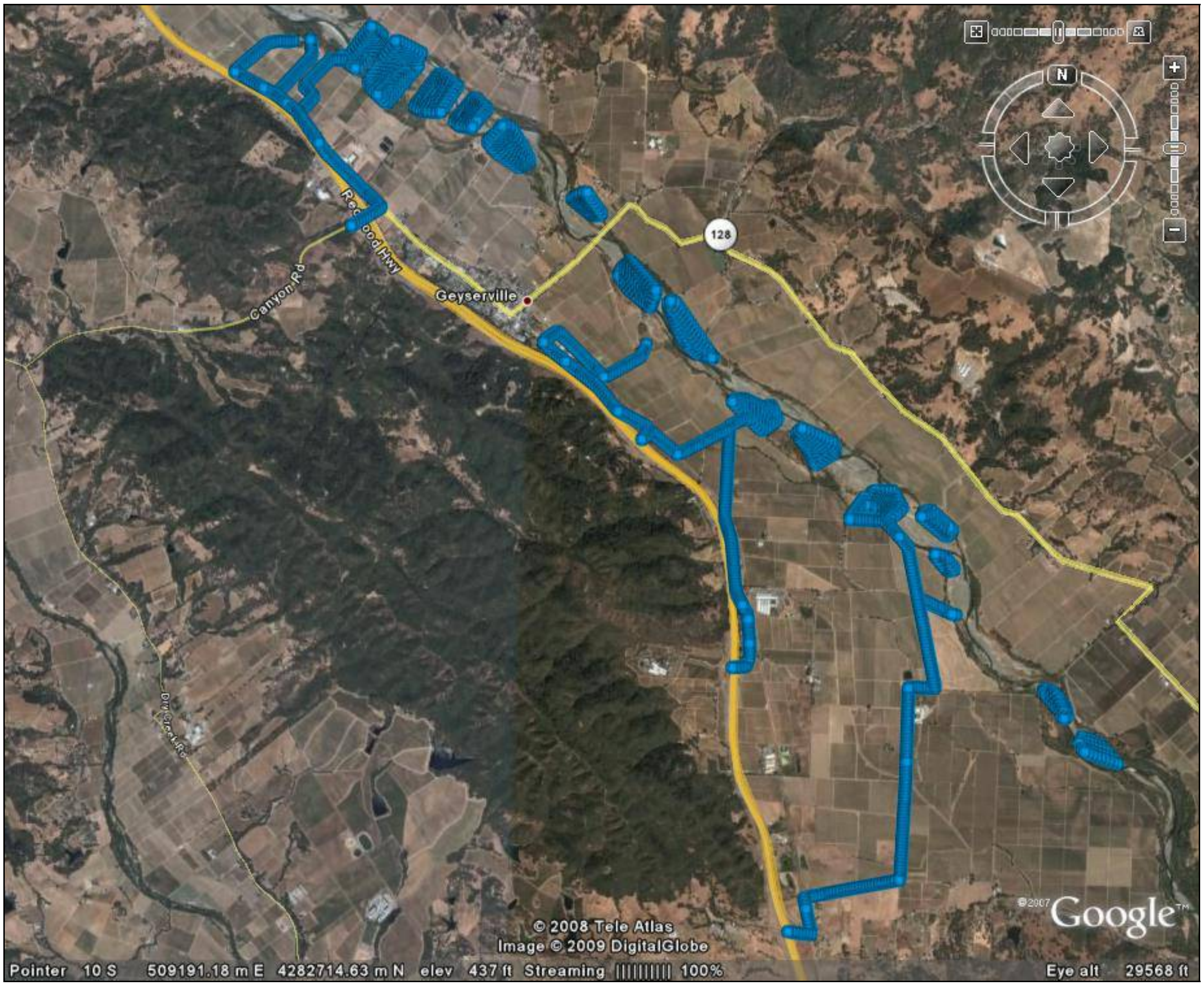
Risk impacts from DPM emissions were evaluated in this analysis using health values approved and published by the OEHHA and the CARB for use in facility HRA's conducted for the AB 2588 Air Toxics Hot Spots Program (CARB, 2008). Table 7 lists the OEHHA adopted inhalation slope factors, non-cancer acute and chronic RELs. The cancer potency factors and RELs used are the most recent values updated in July 2008.

Table 7: Risk Assessment Health Values for Substances of Potential Concern				
Compound (CAS Number)	**Cancer Risk**		**Non-cancer Effects**	
	Inhalation Cancer Potency $(mg/kg\text{-}day)^{-1}$	**Inhalation Unit Risk $(\mu g/m^3)^{-1}$**	**Chronic Inhalation Reference Exposure Level $(\mu g/m^3)$**	**Acute Inhalation Reference Exposure Level $(\mu g/m^3)$**
Acrolein	--	--	6.0E-02	1.9E-01
Diesel Particulate Matter (9901)	1.1E+00	3.0E-04	5.0 E+00	--
Source: OEHHA, 2008				
1. Benzo(a)pyrene (CAS number shown) was modeled as a surrogate carcinogen for all PAH emissions.				

For inhalation of non-carcinogen acrolein, the OEHHA guidance compares the estimated exposure concentrations directly to the REL to see if they are exceeded. For acrolein, the 1-hour maximum concentrations (DPM concentrations adjusted for acrolein) were compared to the Acute REL, and the annual averages were compared to the Chronic REL. Because OEHHA has proposed changing both the acute and chronic RELS (OEHHA, 2007), the concentrations were compared to both the existing and proposed RELS. For 1-hour exposures, the existing acute REL is 0.19 ug/m^3 and the proposed is 2.3. For long-term exposures, the existing chronic REL is 0.06 ug/m^3 and the proposed is 0.10 ug/m^3.

AECOM

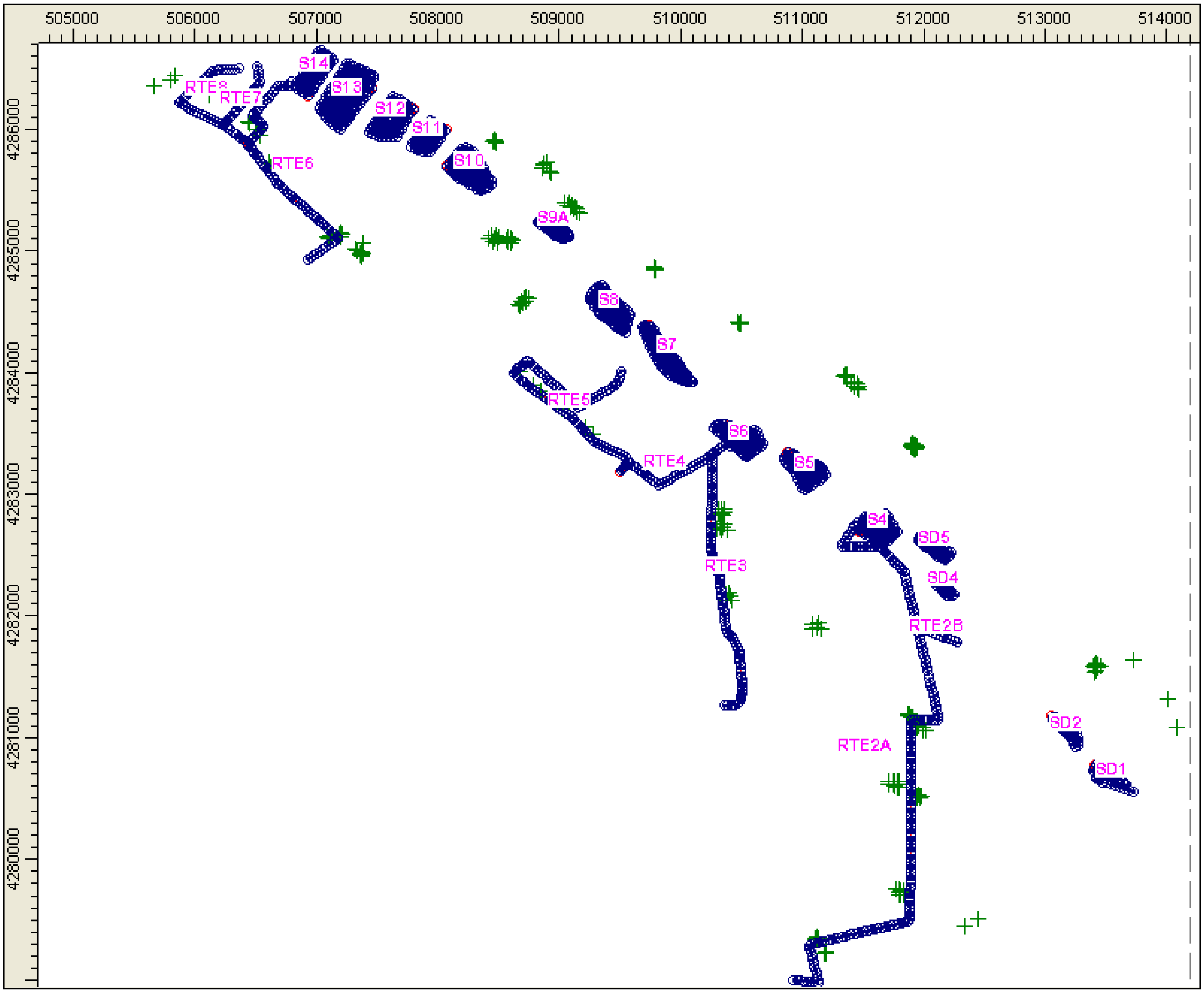
Figure 1: Syar Mining Location



Legend: The blue areas represent the mining bars and haul routes modeled in the study.

AECOM

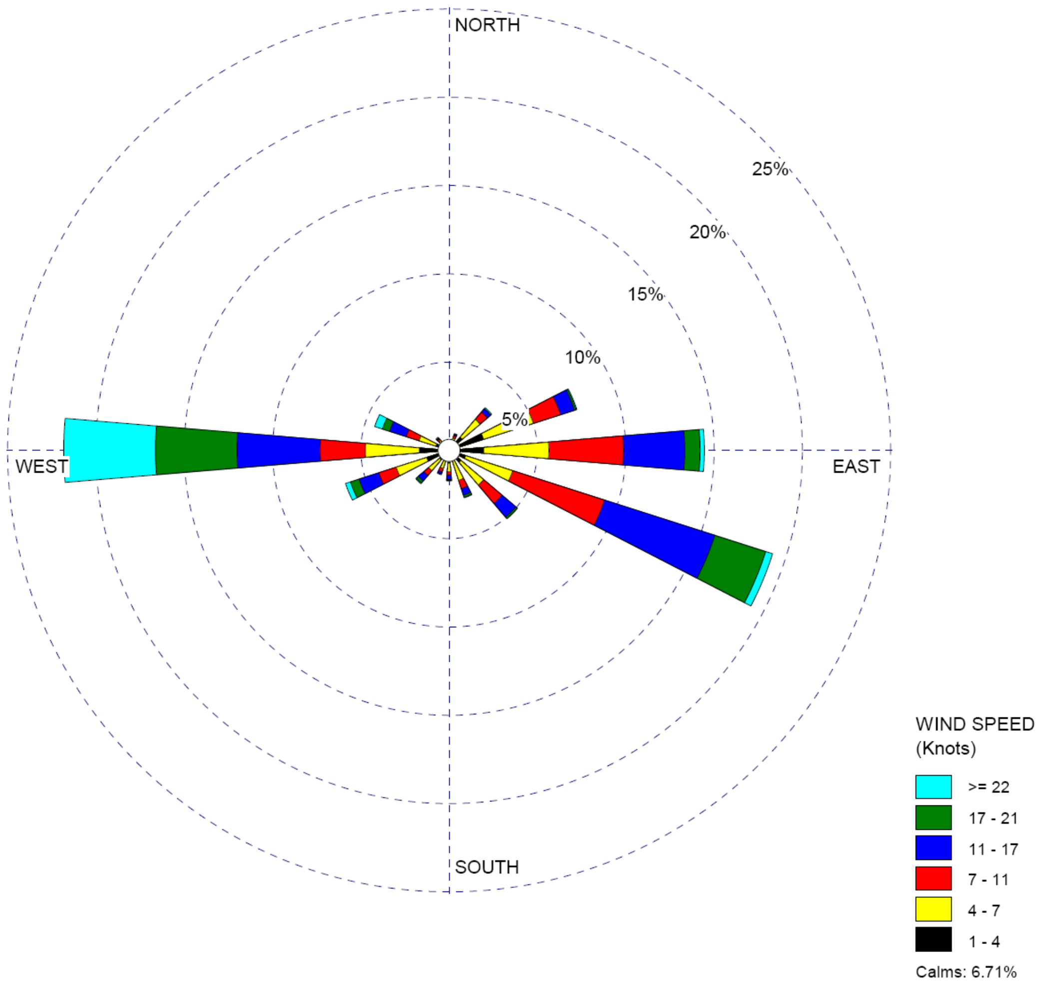
Figure 2: Modeled Emission Sources



Legend: Blue line represents line sources which are modeled as volume sources. Please note that the idling emission sources are associated with each travel route (RTE on the diagram) and are modeled to the inner end of the route (towards the gravel bars represented by SD1 etc.) and are not shown on the plot. Green symbols represent modeled receptors.

Figure 3: Wind-rose for Meteorological Station: 23230 (Year 1999)

WIND ROSE PLOT:	DISPLAY:
1999 **Healdsburg Meteorological Station**	**Wind Speed** **Direction (blowing from)**



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1999 **Jan 1 - Dec 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **6.71%**	TOTAL COUNT: **8760 hrs.**	
	AVG. WIND SPEED: **10.06 Knots**	DATE: **7/24/2007**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

3.0 Health Risk Assessment Results

This report presents an evaluation of the potential cancer risks from DPM emissions associated with proposed gravel mining at the Alexander Valley in Sonoma County, California. In addition, non-cancer impacts from acrolein were evaluated by comparing 1-hour maximum and average annual concentrations of acrolein to their respective acute and chronic RELs.

DPM Cancer Risk

The mining of the gravel bars will be conducted in six phases with a specific emission signature for each phase. In addition, based on relative locations, Syar has grouped the gravel bars and associated haul routes along the 6.5 mile stretch of the Russian River into three regions (Reach 1, 2 and 3). Cancer risks were calculated for each of 6 phases and each of the three reaches at the maximum impacted receptor (identified from dispersion modeling). The ISCST3 predicted DPM concentrations for the 3 reaches represent worst-case scenario as each reach is modeled for the simultaneous operation of all the emission sources within the reach. Annual average ground-level diesel concentrations predicted for each of the six phases and the three reaches are presented in Table 8.

Table 8: Modeled DPM Maximum Concentrations

Source	Maximum DPM Concentration (ug/m^3)			
	Annual	Receptor Number (UTME,UTMN)	1-hr	Receptor Number (UTME,UTMN)
All Sources	0.16397	164 (508458.19, 4285894.00)	12.78974	164 (508458.19, 4285894.00)
Phase 1	0.03846	16 (511141.38, 4279346.50)	5.07008	197 (512027.63, 4281054.00)
Phase 2	0.05443	203 (506503.41, 4286049.50)	3.71609	201 (506126.41, 4286277.00)
Phase 3	0.03794	16 (511141.38, 4279346.50)	3.44221	84 (510361.06, 4282869.00)
Phase 4	0.06567	149 (509166.09, 4285306.50)	9.16475	150 (509121.25, 4285340.50)
Phase 5	0.04714	207 (508685.75, 4284000.50)	4.34482	150 (509121.25, 4285340.50)
Phase 6	0.05636	126 (508749.00, 4284601.00)	4.74613	139 (508612.22, 4285057.00)
Reach 1	0.15443	164 (508458.19, 4285894.00)	9.16475	150 (509121.25, 4285340.50)
Reach 2	0.0794	210 (509029.38, 4283700.00)	7.5082	165 (508478.91, 4285884.00)
Reach 3	0.057834	53 (511917.31, 4281165.00)	3.57961	214 (514093.78, 4281071.50)

The estimated DPM average concentrations were then used to calculate theoretical lifetime cancer risks for receptor with the greatest potential for exposure based on the OEHHA algorithm presented in Section 2.3. The calculated maximum cancer risk is referred to as the individual cancer risk to the maximum exposed individual (MEI). Risk is expressed as the number of cancer cases per million populations that may result from exposure to DPM over a lifetime. Calculated risk estimates for DPM were compared to the risk “threshold” of 10-in-a-million to determine their significance. Risks less than this threshold would be considered insignificant. This threshold is used by several regulatory and permitting agencies (California EPA, Bay Area Air Quality Management District, and NSCAPCD) to evaluate the incremental risk associated with release of compounds from a new source.

Theoretical lifetime risks were estimated based on a 15-year operating cycle based on the proposed operating period. Table 9 presents the MEI cancer risks for the 15-year exposure duration. A 9-year analysis was also run to account for any child exposures and the results are presented in Table 10.

As shown in Table 9, the highest MEI cancer risk among the six phases occurs during Phase 4 of the project. This risk is 1.8-in-a-million, which does not exceed the 10-in-a-million threshold. The cancer risk from the simultaneous operation of all the emission sources in each of the reaches resulted in a maximum of 4.3-in-a-million for Reach 1. The maximum cancer risk of 4.6-in-a-million results when all the emission sources in the entire mining stretch are operated simultaneously, a situation which is highly unlikely.

Table 9: DPM Cancer Risk – 15 Year Exposure

Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT

Source Groups	Annual Concentration (ug/m^3)	Maximum Impacted Receptor (UTME, UTMN)	Cancer Risk	
			SF (mg/kg/day)$^{-1}$	RISK (per million)
All Sources	0.16397	164 (508458.19, 4285894.00)	1.1E+00	4.6E-06
Phase 1	0.03846	16 (511141.38, 4279346.50)	1.1E+00	1.1E-06
Phase 2	0.05443	203 (506503.41, 4286049.50)	1.1E+00	1.5E-06
Phase 3	0.03794	16 (511141.38, 4279346.50)	1.1E+00	1.1E-06
Phase 4	0.06567	149 (509166.09, 4285306.50)	1.1E+00	1.8E-06
Phase 5	0.04714	207 (508685.75, 4284000.50)	1.1E+00	1.3E-06
Phase 6	0.05636	126 (508749.00, 4284601.00)	1.1E+00	1.6E-06
Reach 1	0.15443	164 (508458.19, 4285894.00)	1.1E+00	4.3E-06
Reach 2	0.07940	210 (509029.38, 4283700.00)	1.1E+00	2.2E-06
Reach 3	0.05783	53 (511917.31, 4281165.00)	1.1E+00	1.6E-06

Exposure factors used to calculate contaminant intake:

DPM Slope Factor (mg/kg-day) =	1.1
Exposure Frequency EF (days/year) =	110
Exposure Duration ED (years) =	15
Daily Breathing Rate (liters/kg-day) =	393
Averaging time AT (days) =	25550
A =	1

A 9-year analysis was also run to account for any child exposures and the results are presented in Table 10. As can be seen, the maximum cancer risks estimated at the maximum impacted receptor at each phase and reach do not exceed cancer significance thresholds. Thus the operations at Alexander Valley mining do not result in cancer risk greater than the cancer significance threshold.

Table 10: DPM Cancer Risk - 9 Year Exposure

Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT

Source Groups	Annual Concentration (ug/m^3)	Maximum Impacted Receptor (UTME, UTMN)	Cancer Risk	
			SF (mg/kg/day)$^{-1}$	RISK (per million)
All Sources	0.16397	164 (508458.19, 4285894.00)	1.1E+00	4.1E-06
Phase 1	0.03846	16 (511141.38, 4279346.50)	1.1E+00	9.5E-07
Phase 2	0.05443	203 (506503.41, 4286049.50)	1.1E+00	1.3E-06
Phase 3	0.03794	16 (511141.38, 4279346.50)	1.1E+00	9.4E-07
Phase 4	0.06567	149 (509166.09, 4285306.50)	1.1E+00	1.6E-06
Phase 5	0.04714	207 (508685.75, 4284000.50)	1.1E+00	1.2E-06
Phase 6	0.05636	126 (508749.00, 4284601.00)	1.1E+00	1.4E-06
Reach 1	0.15443	164 (508458.19, 4285894.00)	1.1E+00	3.8E-06
Reach 2	0.07940	210 (509029.38, 4283700.00)	1.1E+00	2.0E-06
Reach 3	0.05783	53 (511917.31, 4281165.00)	1.1E+00	1.4E-06

Exposure factors used to calculate contaminant intake:	
DPM Slope Factor (mg/kg-day) =	1.1
Exposure Frequency EF (days/year) =	110
Exposure Duration ED (years) =	9
Daily Breathing Rate (liters/kg-day) =	581
Averaging time AT (days) =	25550
Conversion factor =	1.00E-05
A =	1

Impact of Acrolein Emissions

This HRA also evaluated the maximum and average acrolein concentrations in relationship to California Regulatory Levels. For inhalation of acrolein, the OEHHA guidance compares the estimated exposure concentrations directly to the REL to see if they are exceeded. For acrolein, the 1-hour maximums were compared to the Acute REL, and the annual average was compared to the Chronic REL. Because OEHHA has proposed changing both the acute and chronic RELs (OEHHA, 2007), the concentrations were compared to both the existing and proposed RELS. For 1-hour exposures, the existing AREL is 0.19 ug/m^3 and the proposed AREL is 2.3. For long-term exposures, the existing CREL is 0.06 ug/m^3 and the proposed CREL is 0.10 ug/m^3. Acrolein's impact is mainly as a powerful irritant to the eyes and inhalation pathways, including the throat and lungs. The proposed acute REL of 2.3 ug/m^3 is set at a level to protect against eye irritation. The proposed chronic REL of 0.10 ug/m^3 is set at a level to prevent lesions of the lung due to long-term exposure. OEHHA's proposed acceptable acute and chronic exposure levels for acrolein are considered as appropriate and are used in this assessment.

Table 11 summarizes the estimated annual average and 1-hr DPM air concentrations and estimated acrolein concentrations at the maximum exposed receptor locations for all the phases and reaches modeled in this study. These results demonstrate that the estimated annual average and maximum 1-hr acrolein concentrations associated with the proposed activities at the Syar operations are much less than the pre-existing statewide ambient air background level of 1.2 ug/m^3 (0.53 ppbv) (OEHHA 2007) that has been measured in California. In short, acrolein emissions from proposed activities at the Syar facility would result in lower concentrations than found in ambient air throughout the state. None of the concentrations exceed either the existing chronic REL of 0.06 ug/m^3 or the proposed value of 0.10 or the existing acute REL of 0.19 ug/m^3 or the proposed value of 2.3 ug/m^3. Even the highly unlikely operating scenario including simultaneous operation of all the emission sources in all three reaches do not exceed the regulatory levels.

Table 11: Estimated Annual and 1-hr Maximum Acrolein Concentrations

	DPM Concentration (ug/m^3)		Acrolein Concentration(1) (ug/m^3)		REL (ug/m^3)			
Source	**Annual**	**1-hr**	**Annual**	**1-hr**	**Chronic**	**Acute**	**Exceed Chronic Threshold?**	**Exceed Acute Threshold?**
All Sources	0.16397	12.78974	2.13E-03	1.66E-01	0.06	0.19	No	No
Phase 1	0.03846	5.07008	5.00E-04	6.59E-02			No	No
Phase 2	0.05443	3.71609	7.08E-04	4.83E-02			No	No
Phase 3	0.03794	3.44221	4.93E-04	4.47E-02			No	No
Phase 4	0.06567	9.16475	8.54E-04	1.19E-01			No	No
Phase 5	0.04714	4.34482	6.13E-04	5.65E-02			No	No
Phase 6	0.05636	4.74613	7.33E-04	6.17E-02			No	No
Reach 1	0.15443	9.16475	2.01E-03	1.19E-01			No	No
Reach 2	0.0794	7.5082	1.03E-03	9.76E-02			No	No
Reach 3	0.057834	3.57961	7.52E-04	4.65E-02			No	No

(1) Acrolein concentrations are estimated as DPM concentration multiplied by 0.013. The factor 0.013 is the ratio of acrolein to DPM reported by CARB (CARB 2008). The concentrations reported for each source group are for the highest impacted receptor location as presented in the previous tables.

4.0 Conclusion

The HRA concludes that the proposed mining operations at the Syar Alexander Instream Mining facility will not result in a significant cancer risk or non-cancer health impacts. The operations will also not cause receptors to be exposed to acrolein concentrations exceeding the regulatory chronic and acute RELs.

5.0 REFERENCES

California Air Pollution Control Officers Association (CAPCOA), 1993. Air Toxics "Hot Spots" Program: Revised 1992 Risk Assessment Guidelines.

CARB, 1998. Proposed identification of diesel exhaust as a toxic air contaminant. California Environmental Protection Agency, Air Resources Board and Office of Environmental Health Hazard Assessment, Sacramento, CA. April.

Office of Environmental Health Hazard Assessment (OEHHA), 2008. Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, June.

OEHHA, 2003. Air Toxics Hotspots Program Guidance Manual for Preparation of Health Risk Assessments. August.

OEHHA, 2007. Acrolein Reference Exposure Levels. Public Review Draft. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Sacramento, CA. November.

CARB, 2008. Clearinghouse of diesel emission factors. ARB Website, http://www.arb.ca.gov/ab2588/clearinghouse.htm. July.

Appendix A

Detailed Emission Calculations

Table A-1: DPM Emission - Off-road Mining						
Source	PM10 Emission Rate[1]		Operating Hours per Day	DPM Emission Rate		
	lbs/day	g/day		g/s	lb/yr	lb/hr
SD-1	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
SD-2	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
SD-4	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
SD-5	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-4	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-5	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-6	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-7	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-8	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-9	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-10	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-11	1.9	861.825503	16.5	1.45E-02	209	1.15E-01
S-12	1.9	861.825503	16.5	1.45E-02	209	1.15E-01

(1) Emissions calculated based on off-road emission factor in Construction Emissions Model (Version 5.2) (Sacramento Metropolitan Air Quality Management District, SMAQMD) as provided in Draft EIR.

Table A-2: DPM Emission - Haul Truck Running									
Route No.	Length (mi.)	Emission Factor[(1)] (g/mi)	Trips per Day	Emissions (g/day)	Hours per Day	Seconds per Day	DPM Emissions		
							g/s	lb/yr	lb/hr
2A	3.38	0.24	480	3.90E+02	12	43200	9.03E-03	9.46E+01	7.16E-02
2B	0.21	0.24	480	2.36E+01	12	43200	5.47E-04	5.73E+00	4.34E-03
3	1.51	0.24	480	1.74E+02	12	43200	4.03E-03	4.22E+01	3.20E-02
4	0.59	0.24	480	6.76E+01	12	43200	1.57E-03	1.64E+01	1.24E-02
5	1.45	0.24	480	1.67E+02	12	43200	3.87E-03	4.06E+01	3.07E-02
6	1.36	0.24	480	1.57E+02	12	43200	3.64E-03	3.81E+01	2.89E-02
7	0.51	0.24	480	5.83E+01	12	43200	1.35E-03	1.41E+01	1.07E-02
8	0.36	0.24	480	4.15E+01	12	43200	9.61E-04	1.01E+01	7.63E-03

(1) Emissions calculated based on off-road emission factor in SMAQMD Construction Emissions Model (Version 5.2) as provided in Draft EIR.

Table A-3: DPM Emission- Haul Truck Idling							
Trips per Day	Idle Emission Factor(1) (g/s)	Idle Time Per Trip (min.)	Total Idle Time (min.)	Hours per Day	DPM Emissions		
					g/s	lb/yr	lb/hr
480	0.00048	10	4800	12	3.20E-03	3.35E+01	2.54E-02

(1) EMFAC2007 Emission Factors calculated for Northern Sonoma County APCD (NSCAPCD) for Year 2008

Appendix B

Detailed Health Risk Calculations

Table B-1: Modeled DPM Concentrations				
Source	Maximum DPM Concentration (ug/m^3)			
	Annual	Maximum Impacted Receptor ID (UTME(m), UTMN(m))	1-hr	Maximum Impacted Receptor ID (UTME(m), UTMN(m))
All Sources	0.16397	164 (508458.19, 4285894.00)	12.78974	164 (508458.19, 4285894.00)
Phase 1	0.03846	16 (511141.38, 4279346.50)	5.07008	197 (512027.63, 4281054.00)
Phase 2	0.05443	203 (506503.41, 4286049.50)	3.71609	201 (506126.41, 4286277.00)
Phase 3	0.03794	16 (511141.38, 4279346.50)	3.44221	84 (510361.06, 4282869.00)
Phase 4	0.06567	149 (509166.09, 4285306.50)	9.16475	150 (509121.25, 4285340.50)
Phase 5	0.04714	207 (508685.75, 4284000.50)	4.34482	150 (509121.25, 4285340.50)
Phase 6	0.05636	126 (508749.00, 4284601.00)	4.74613	139 (508612.22, 4285057.00)
Reach 1	0.15443	164 (508458.19, 4285894.00)	9.16475	150 (509121.25, 4285340.50)
Reach 2	0.0794	210 (509029.38, 4283700.00)	7.5082	165 (508478.91, 4285884.00)
Reach 3	0.057834	53 (511917.31, 4281165.00)	3.57961	214 (514093.78, 4281071.50)

Table B-2: DPM Cancer Risk for a 70 Year Exposure				
Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT				
Source Groups	Annual Mass GLC (ug/m^3)	Maximum Impacted Receptor ID (UTME(m), UTMN(m))	Cancer Risk	
			SF (mg/kg/day)$^{-1}$	RISK (per million)
All Sources	0.16397	164 (508458.19, 4285894.00)	1.1E+00	2.1E-05
Phase 1	0.03846	16 (511141.38, 4279346.50)	1.1E+00	5.0E-06
Phase 2	0.05443	203 (506503.41, 4286049.50)	1.1E+00	7.1E-06
Phase 3	0.03794	16 (511141.38, 4279346.50)	1.1E+00	4.9E-06
Phase 4	0.06567	149 (509166.09, 4285306.50)	1.1E+00	8.6E-06
Phase 5	0.04714	207 (508685.75, 4284000.50)	1.1E+00	6.1E-06
Phase 6	0.05636	126 (508749.00, 4284601.00)	1.1E+00	7.3E-06
Reach 1	0.15443	164 (508458.19, 4285894.00)	1.1E+00	2.0E-05
Reach 2	0.07940	210 (509029.38, 4283700.00)	1.1E+00	1.0E-05
Reach 3	0.05783	53 (511917.31, 4281165.00)	1.1E+00	7.5E-06

Exposure factors used to calculate contaminant intake:

DPM Slope Factor (mg/kg-day) =	1.1
Exposure Frequency EF (days/year) =	110
Exposure Duration ED (years) =	70
Daily Breathing Rate (liters/kg-day) =	393
Averaging time AT (days) =	25550
Conversion factor (ug to mg and L to m3) =	1.0E-06
A =	1

Table B-3: DPM Cancer Risk for a 15 Year Exposure				
Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT				
Source Groups	Annual Mass GLC ($\mu g/m^3$)	Maximum Impacted Receptor ID (UTME(m), UTMN(m))	Cancer Risk	
			SF $(mg/kg/day)^{-1}$	RISK (per-million)
All Sources	0.16397	164 (508458.19, 4285894.00)	1.1E+00	4.6E-06
Phase 1	0.03846	16 (511141.38, 4279346.50)	1.1E+00	1.1E-06
Phase 2	0.05443	203 (506503.41, 4286049.50)	1.1E+00	1.5E-06
Phase 3	0.03794	16 (511141.38, 4279346.50)	1.1E+00	1.1E-06
Phase 4	0.06567	149 (509166.09, 4285306.50)	1.1E+00	1.8E-06
Phase 5	0.04714	207 (508685.75, 4284000.50)	1.1E+00	1.3E-06
Phase 6	0.05636	126 (508749.00, 4284601.00)	1.1E+00	1.6E-06
Reach 1	0.15443	164 (508458.19, 4285894.00)	1.1E+00	4.3E-06
Reach 2	0.07940	210 (509029.38, 4283700.00)	1.1E+00	2.2E-06
Reach 3	0.05783	53 (511917.31, 4281165.00)	1.1E+00	1.6E-06

Exposure factors used to calculate contaminant intake:

DPM Slope Factor (mg/kg-day) =	1.1
Exposure Frequency EF (days/year) =	110
Exposure Duration ED (years) =	15
Daily Breathing Rate (liters/kg-day) =	393
Averaging time AT (days) =	25550
Conversion factor (ug to mg and L to m3) =	1.0E-06
A =	1

Table B-4: DPM Cancer Risk for a 9 Year Exposure				
Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT				
Source Groups	**Annual Mass GLC ($\mu g/m^3$)**	**Maximum Impacted Receptor ID (UTME(m), UTMN(m))**	**Cancer Risk**	
			SF $(mg/kg/day)^{-1}$	**RISK (per-million)**
All Sources	0.16397	164 (508458.19, 4285894.00)	1.1E+00	4.1E-06
Phase 1	0.03846	16 (511141.38, 4279346.50)	1.1E+00	9.5E-07
Phase 2	0.05443	203 (506503.41, 4286049.50)	1.1E+00	1.3E-06
Phase 3	0.03794	16 (511141.38, 4279346.50)	1.1E+00	9.4E-07
Phase 4	0.06567	149 (509166.09, 4285306.50)	1.1E+00	1.6E-06
Phase 5	0.04714	207 (508685.75, 4284000.50)	1.1E+00	1.2E-06
Phase 6	0.05636	126 (508749.00, 4284601.00)	1.1E+00	1.4E-06
Reach 1	0.15443	164 (508458.19, 4285894.00)	1.1E+00	3.8E-06
Reach 2	0.07940	210 (509029.38, 4283700.00)	1.1E+00	2.0E-06
Reach 3	0.05783	53 (511917.31, 4281165.00)	1.1E+00	1.4E-06

Exposure factors used to calculate contaminant intake:	
DPM Slope Factor (mg/kg-day) =	1.1
Exposure Frequency EF (days/year) =	110
Exposure Duration ED (years) =	9
Daily Breathing Rate (liters/kg-day) =	581
Averaging time AT (days) =	25550
Conversion factor (ug to mg and L to m3) =	1.0E-06
A =	1

Table B-5: Estimated Annual and 1-hr Maximum Acrolein Concentration								
Source	DPM Concentration[1] (ug/m^3)		Acrolein Concentration[2] (ug/m^3)		REL (ug/m^3)		Exceed Chronic Threshold?	Exceed Acute Threshold?
	Annual	1-hr	Annual	1-hr	Chronic	Acute		
All Sources	0.16397	12.78974	2.13E-03	1.66E-01	0.06	0.19	No	No
Phase 1	0.03846	5.07008	5.00E-04	6.59E-02			No	No
Phase 2	0.05443	3.71609	7.08E-04	4.83E-02			No	No
Phase 3	0.03794	3.44221	4.93E-04	4.47E-02			No	No
Phase 4	0.06567	9.16475	8.54E-04	1.19E-01			No	No
Phase 5	0.04714	4.34482	6.13E-04	5.65E-02			No	No
Phase 6	0.05636	4.74613	7.33E-04	6.17E-02			No	No
Reach 1	0.15443	9.16475	2.01E-03	1.19E-01			No	No
Reach 2	0.0794	7.5082	1.03E-03	9.76E-02			No	No
Reach 3	0.057834	3.57961	7.52E-04	4.65E-02			No	No

(1) DPM Concentrations obtained from ISC modeling of DPM emissions for each source group listed. The concentration shown for each source group is the concentration at the maximum impacted receptor as shown in previous tables.

(2) Acrolein concentrations are estimated as DPM concentrations multiplied by 0.013. The factor 0.013 is the ratio of acrolein to DPM reported by CARB (CARB 2008).

Appendix C

ISC Modeling Files

Appendix C: ISC File Index

- SY_HRA folder includes the following files:

  SY_HRA.IS
  SY_HRA.dat
  SY_HRA.ini
  SY_HRA.inp
  SY_HRA.isc
  SY_HRA.out

- Met_Data folder includes the meteorological file “OK_HLB99.met”.

APPENDIX J

TRAFFIC NOISE ANALYSIS

Appendix J

Project-Generated Haul Truck Trip Source Noise Prediction Model

Syar Industries-Instream Mining Project

EDAW | AECOM

Assumptions:

Mean SEL Reference Level	84.0	84.0
Assumed Haul Truck Speed (mph)	15.0	15.0
Number of Hours for Hauling per Day	12.0	12.0
Number of Trips per Hour-one way	40.0	80.0
Leq for Haul Trips at 50 feet	56.6	59.6

		Resulting Noise Level (dBA, L_{eq})[1]	
Receptor[2]	Distance (feet)[2]	40 Trips per Hour	80 Trips per Hour
A	585	40.6	43.6
B	760	38.8	41.9
C	385	43.3	46.3
D	130	50.4	53.4
E	80	53.5	56.5
F	60	55.4	58.4
G	90	52.7	55.8
H	85	53.1	56.1
I	45	57.3	60.3
J	175	48.4	51.4
K	175	48.4	51.4
L	160	49.0	52.0
M	115	51.2	54.2
N	95	52.4	55.4
O	75	53.9	56.9
P	150	49.4	52.4
Q	170	48.6	51.6
R	120	50.9	53.9
S	180	48.2	51.2
T	325	44.4	47.4
U	1050	36.7	39.8
V	390	43.2	46.2
W	135	50.1	53.1
X	210	47.2	50.2
Y	100	52.1	55.1
Z	85	53.1	56.1
CC	100	52.1	55.1
DD	320	44.5	47.5
EE	220	46.9	49.9

Sources:

[1] Based the Federal Transit Noise and Vibration Impact Assessment, 2006.

[2] Based on Figures 3.7-1 through 3.7-3

APPENDIX K

STATIONARY NOISE ANALYSIS

Appendix K

Project-Generated Construction Source Noise Prediction Model

Syar Industries-Instream Mining Project

EDAW | AECOM

Receptor[4]	Proposed Bar [4]	Distance to Receptor in feet	Modeled Noise Level (dBA) L_{eq}	L_{10}	L_{max}
1	S-10	450	61.7	58.7	65.4
2	S-10	720	56.4	53.4	60.1
3	S-10	1,050	52.2	49.2	55.9
4	S-9	1,015	52.6	49.6	56.3
5	S-9	500	60.5	57.5	64.2
6	S-9	715	56.5	53.5	60.2
7	S-9	530	59.8	56.8	63.6
8	S-9	925	53.6	50.6	57.3
9	S-9	900	53.9	50.9	57.6
10	S-9	1,050	52.2	49.2	55.9
11	S-8	1,500	48.2	45.2	51.9
12	S-8	1,480	48.4	45.4	52.1
13	S-7	2,275	43.6	40.6	47.3
14	S-7	1800	46.2	43.2	49.9
15	S-7	1,950	45.3	42.3	49.0
16	S-6	2,700	41.6	38.6	45.4
17	S-5	2300	43.4	40.4	47.2
18	S-4	2080	44.6	41.6	48.3
19	S-4	2000	45.0	42.0	48.7
20	SD-4	1775	46.3	43.3	50.1
21	SD-4	3560	38.6	35.6	42.3
22	SD-2	1500	48.2	45.2	51.9
23	SD-2	2265	43.6	40.6	47.3
24	SD-1	2590	42.1	39.1	45.8
25	SD-1	2600	42.1	39.1	45.8

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50	Usage Factor[2]
Grader	85	0.48
Dozer	85	0.54
Front End Loader	80	0.43
Water Truck	84	0.2

Ground Type	Soft
Source Height	8
Receiver Height	12
Ground Factor	0.57

Predicted Noise Level[3]	L_{eq} dBA at 50 feet[3]
Grader	81.8
Dozer	82.3
Front End Loader	76.3
Water Truck	77.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
86.2

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006.

[2] Based on information provided by Syar Industries.

[3] Based the Federal Transit Noise and Vibration Impact Assessment, 2006.

[4] Based on Figures 3.7-1 through 3.7-3