

Draft

HENRY CORNELL WINERY

Environmental Impact Report
SCH # 2008102040

Prepared for
County of Sonoma Permit and
Resource Management Department

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CHAPTER I

Introduction

A. Environmental Review

The project applicant, Guy Davis, representing Cornell Farms, LLC (Cornell Farms), proposes to develop a winery in eastern Sonoma County. The project applicant has requested the necessary entitlements from the County of Sonoma to enable development of the winery. Approval of this request would grant a use permit for development and operation of the winery, and any approval conditions that are imposed. The proposed winery would have a maximum annual production capacity of 10,000 cases.

The California Environmental Quality Act (CEQA) requires that before a decision can be made to approve a project with potentially significant environmental effects, an EIR must be prepared that fully describes the environmental effects of the project. The EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental consequences of a proposed project, to recommend mitigation measures to lessen or eliminate adverse impacts, and to examine feasible alternatives to the project. The information contained in the EIR is reviewed and considered by the governing agency prior to the ultimate decision to approve, disapprove, or modify the proposed project.

CEQA requires that the Lead Agency (in this case, the County of Sonoma) shall neither approve nor implement a project as proposed unless the project's significant environmental effects have been reduced to a less-than-significant level, essentially "eliminating, avoiding, or substantially lessening" the expected impact. If the Lead Agency approves the project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must state the reasons for its action in writing. This "Statement of Overriding Considerations" must be included in the record of project approval.

On February 27, 2012, the County sent a Notice of Preparation (NOP) to governmental agencies and organizations and persons interested in the project. The NOP is included as Appendix A. The NOP requested those agencies with regulatory authority over any aspect of the project to describe that authority and to identify the relevant environmental issues that should be addressed in the EIR.

During the time the Draft EIR is available for public review, written comments on the adequacy of the Draft EIR may be submitted to the County. Responses to all substantive comments received on the adequacy of the Draft EIR and submitted within the specified review period will be included and responded to in the Final EIR. Prior to approval of the project, the County must

certify the Final EIR and adopt a reporting and monitoring program for mitigation measures identified in this report in accordance with the requirements of Public Resources Code Section 21081.

B. This EIR

This EIR has been prepared by the County of Sonoma as Lead Agency in conformance with CEQA. This EIR is intended to provide the information and environmental analysis necessary to assist public agency decision-makers in considering all of the approvals necessary to implement the proposed project.

In conformance with CEQA, California *Public Resources Code*, Section 21000 *et. seq.*, this EIR provides objective information addressing the environmental consequences of the proposed project and possible means of reducing or avoiding its potentially significant impacts.

The guidelines for implementing CEQA help define the role of this EIR:

15121 (a) Information Document. An EIR is an informational document which will inform public agency decision-makers and the public generally of the significant environmental effect(s) of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency.

15151 Standards for Adequacy of an EIR. An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which 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 to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

Plans for the project have proceeded to a degree sufficient to permit environmental analysis in conformance with CEQA. Accordingly, this EIR presents reasonable assumptions (as described in Chapter III, Project Description) about the overall types and levels of activities that the County could anticipate under the proposed project and describes their attendant environmental impacts. The analyses, where necessary, are based on conservative assumptions that tend to overstate project impacts. The EIR was prepared in accordance with current State, County and other applicable agency CEQA *Guidelines* and professional standards.

The *CEQA Guidelines*, Section 15382, define a significant effect on the environment as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project. . .” Therefore, in identifying the significant impacts of the project, this EIR concentrates on its substantial physical effects and upon mitigation measures to avoid, reduce, or otherwise alleviate those effects.

There have been several previous proposals to develop a winery on Cornell Farms' parcels, for which the County has conducted environmental review pursuant to CEQA. The most recent prior environmental document for a winery, an Initial Study and Mitigated Negative Declaration (MND), was prepared on August 9, 2010 (included as Appendix B in this EIR). Section IV.A of this EIR summarizes relevant prior impact analysis and mitigation measures from the 2010 Initial Study, and provides revised or new information, analysis and mitigation measures where appropriate to reflect the Project as currently proposed. It was determined that most of the environmental topics have been sufficiently analyzed and mitigated in Section IV.A in this EIR, and therefore, do not require further analysis. However, based on the scope of Project changes and new information available, three environmental topics – Geology, Soils and Seismicity; Hydrology and Water Quality; and Biological Resources – are analyzed in separate sections in this EIR (Sections IV.B, IV.C and IV.D, respectively).

C. Range of Alternatives

CEQA requires that a reasonable range of alternatives be discussed in an EIR. This EIR identifies and analyzes such a reasonable range of alternatives; discusses the environmental effects of each alternative; and compares the environmental effects of each alternative with the environmental setting and with the project; and addresses the relationship of each alternative to the project objectives. The determinations of the County concerning the feasibility, acceptance, or rejection of each and all alternatives considered in this EIR will be addressed and resolved in the County's findings when it considers approval of the project, as required by CEQA.

The alternatives consist of the following:

- 1) No Project Alternatives consisting of Alternative 1A) No Project – No Subsequent Development, and Alternative 1B) No Project – Reasonably Foreseeable Development;
- 2) Water Use Alternatives, consisting of Alternative 2A) No Winery Dry Season Groundwater Pumping / Additional Rain Water Harvesting and Storage, and Alternative 2B) Conservation Easement(s) on Cornell Farms and/or Adjacent Property; and
- 3) Reduced Production / Reduced Footprint Alternative

D. Use of the EIR

The EIR provides the environmental information and evaluation necessary for the planning, construction, operation and maintenance of the project. The EIR provides the CEQA compliance documentation upon which the County's consideration of, and action on, all applicable land use permits and other approvals (collectively, "approvals") shall be based. These include without limitation all those approvals set forth in this EIR, as well as any additional approvals necessary or useful to such planning, construction, operation and maintenance (e.g., any use permits, grading permits, and other development-related approvals).

E. Public Participation

CEQA and the County of Sonoma encourage public participation in the planning and environmental review processes. Opportunities will be provided for the public to present comments and concerns regarding the CEQA and planning process through a CEQA public review and comment period and public hearings or meetings before the Sonoma County Planning Commission or Sonoma County Board of Zoning Adjustments, and thereafter, the Sonoma County Board of Supervisors. Written public comments may be submitted to the County of Sonoma at any time during the public review and comment period, and written and spoken comments may be presented at the public hearings.

F. Organization of the Draft EIR

The Draft EIR begins with this Introduction (Chapter I), which provides an overview that describes the intended use and organization of this EIR, and sets forth some of the assumptions critical to the environmental analysis. The chapters following the Introduction are organized as follows:

Chapter II, Summary: The Summary summarizes the EIR by providing an overview of the project, the environmental impacts that would result from the project, the mitigation measures identified to reduce or eliminate these impacts, and the alternatives to the project.

Chapter III, Project Description, provides a description of the project site and location, the project goals and objectives, the project setting, the proposed project components, an outline of the approval process, and project construction and completion.

Chapter IV, Environmental Setting, Impacts, and Mitigation: This chapter describes the existing setting, discusses the environmental impacts of the project, describes cumulative impacts, and identifies mitigation measures for the environmental impacts examined in the EIR. Section IV.A of this chapter summarizes relevant prior impact analysis, conclusions and mitigation measures from the 2010 Initial Study, and provides revised or new information, analysis and mitigation measures where appropriate to reflect the Project as currently proposed. Further environmental analysis is conducted in Section IV.B, Geology, Soils and Seismicity; Section IV.C, Hydrology and Water Quality; and Section IV.D., Biological Resources.

Chapter V, Alternatives: This chapter presents a reasonable range of alternatives to the proposed project, provides discussion of the environmental impacts associated with each alternative, compares the relative impacts of each alternative to those of the project, and discusses the relationship of the alternatives to the project objectives.

Chapter VI, Impact Overview: This chapter presents discussions of growth inducement, and summarizes discussions of cumulative impacts, unavoidable significant impacts, and effects found not to be significant.

Chapter VII, Report Preparation: This chapter lists report preparers and identifies persons and organizations consulted during report preparation (if any).

Appendices: The Appendices contain the Notice of Preparation and a number of EIR technical supporting documents.

References cited throughout this EIR are on file and available for public review at the Sonoma County Permit and Resource Management Department, 2550 Ventura Avenue, in Santa Rosa, unless otherwise specified herein.

CHAPTER II

Summary

A. Project Description

The project applicant, Guy Davis, representing Cornell Farms, LLC (Cornell Farms), proposes to develop a winery in eastern Sonoma County. The project applicant has requested the necessary entitlements from the County of Sonoma to enable development of the winery. Approval of this request would grant a use permit for development and operation of the winery, and any approval conditions that are imposed. The proposed winery would have a maximum annual production capacity of 10,000 cases.

B. Environmental Impacts and Mitigation Measures

Potential environmental impacts of the project are summarized in Table II-1 at the end of this chapter. For each significant impact, the table indicates whether the impact would be mitigated to a less-than-significant level. Please refer to Chapter IV, Environmental Setting, Impacts, and Mitigation Measures, in this EIR for a complete discussion of each impact. As discussed in Chapter I, a reporting and monitoring program for all mitigation measures identified in this EIR would be prepared in accordance with the requirements of Public Resources Code Section 21081.

The proposed project, if implemented, could result in significant adverse environmental impacts. Mitigation measures proposed as part of the project, as well as measures identified by this EIR, would avoid or reduce all impacts to a less-than-significant level.

C. Alternatives

Chapter V discusses the following alternatives to the proposed project: 1) No Project Alternatives consisting of Alternative 1A) No Project - No Subsequent Development, and Alternative 1B) No Project – Reasonably Foreseeable Development; 2) Water Use Alternatives, consisting of Alternative 2A) No Winery Dry Season Groundwater Pumping / Additional Rain Water Harvesting and Storage, and Alternative 2B) Conservation Easement(s) on Cornell Farms and/or Adjacent Property; and 3) a Reduced Production / Reduced Footprint Alternative.

Of the alternatives assessed in this EIR, the alternative with the least environmental impact is the No Project – No Subsequent Development Alternative. 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 2B –Conservation Easement(s) on Cornell Farms and/or Adjacent Property is determined to be the environmentally superior alternative.

D. Areas of Controversy

There have been several previous proposals to develop a winery on Cornell Farms' parcels, for which the County has conducted environmental review pursuant to CEQA. The most recent prior environmental document for a winery, a Mitigated Negative Declaration (MND), was prepared on August 9, 2010 (included as Appendix B in this EIR). The Sonoma County Board of Zoning Adjustments (BZA) adopted the MND and approved the winery project on September 23, 2010, however, on September 28, 2010, an appeal of the BZA approval was filed, citing a range of potential environmental issues associated with geology, hydrology, biology and traffic. Prior to the appeal hearing, the applicant and the County agreed to have an EIR prepared for the Project to facilitate full public disclosure. Please see Chapter III, Project Characteristics, for additional detail on the Project history, and a full description of the Project as currently proposed.

Section IV.A of this EIR summarizes relevant prior impact analysis and mitigation measures from the 2010 Initial Study, and provides revised or new information, analysis and mitigation measures where appropriate to reflect the Project as currently proposed. It was determined that most of the environmental topics have been sufficiently analyzed and mitigated in Section IV.A in this EIR, and therefore, do not require further analysis. However, based on the scope of Project changes and new information available, three environmental topics – Geology, Soils and Seismicity; Hydrology and Water Quality; and Biological Resources – are analyzed in separate sections in this EIR (Sections IV.B, IV.C and IV.D, respectively).

**TABLE II-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
A. Summary of the Initial Study: Aesthetics			
Impact 1d: The proposed exterior lighting associated with the Project would have the potential to create a new source of nighttime light in the vicinity.	Potentially Significant	Mitigation Measure 1d: Prior to issuance of building permits, an exterior lighting plan shall be submitted for review and approval by PRMD Project Review staff. The exterior lighting plan shall demonstrate that the Project will not cause substantial nighttime light visible from other locations. Exterior lighting shall be low mounted, downward casting and fully shielded to prevent glare. Lighting shall not wash out structures or any portions of the site. Light fixtures shall not be located at the periphery of the property and shall not spill over onto adjacent properties or into the night sky. Flood lights are not permitted. All parking lot lighting fixtures shall be fully cut-off and shall not exceed four feet in height. Lighting shall shut off automatically after closing and security lighting shall be motion-sensor activated.	Less than Significant
A. Summary of the Initial Study: Cultural Resources			
Impact 5b: Land alteration proposed under the Project could affect previously undiscovered subsurface archaeological resources.	Potentially Significant	Mitigation Measure 5b: All building and/or grading permits shall have the following note printed on plan sheets: "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 property, all work shall be halted in the vicinity of the find and County 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. Historic artifacts potentially include all by-products of human land use greater than 50 years of age including trash pits older than fifty years of age. 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. Mitigations may include avoidance, removal, preservation and/or recordation in accordance with California law. Archeological evaluation and mitigation shall be at the applicant's sole expense."	Less than Significant

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
A. Summary of the Initial Study: Cultural Resources (cont.)			
Impact 5c: Land alteration proposed under the Project could affect previously undiscovered paleontological resources.	Potentially Significant	<p>Mitigation Measure 5c: All building and/or grading permits shall have the following note printed on plan sheets:</p> <p>“If paleontological artifacts are found during site development, all earthwork in the vicinity of the find shall cease, and PRMD staff shall be notified so that the find can be evaluated by a qualified paleontologist. When contacted, a member of PRMD Project Review staff and the paleontologist shall visit the site to determine the extent of the resources and to develop proper mitigation measures required for the discovery. No earthwork in the vicinity of the find shall commence until a mitigation plan is approved and completed subject to the review and approval of the paleontologist and Project Review staff. This condition shall be noted on all grading and construction plans and provided to all contractors and superintendents on the job site regarding the procedures to follow in the event that artifacts are found including contact information for PRMD.”</p>	Less than Significant
Impact 5d: Land alteration proposed under the Project could affect previously undiscovered subsurface human remains.	Potentially Significant	<p>Mitigation Measure 5d: All building and/or grading permits shall have the following note printed on plan sheets:</p> <p>“If human remains are encountered, excavation or disturbance of the location shall be halted immediately in the vicinity of the find, and the County Coroner contacted. If the Coroner determines the remains are Native American, the Coroner will contact the Native American Heritage Commission (NAHC). The NAHC will identify the person or persons believed to be most likely descended from the deceased Native American. The NAHC will then work with the applicant on re-interring the remains. The applicant shall be responsible for all costs incurred in the removal, identification and reburial of the remains. This condition shall be noted on all grading and construction plans and provided to all contractors and superintendents on the job site regarding the procedures to follow in the event that human remains are found including contact information for the County Coroner’s Office.</p>	Less than Significant
A. Summary of the Initial Study: Land Use and Planning			
Impact 10b: The project could conflict with land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental impact.	Potentially Significant	<p>Mitigation Measure 10b: Implement Mitigation Measure B.3 (geotechnical remedies to correct problematic soils) and Mitigation Measure B.4 (geotechnical erosion controls).</p>	Less than Significant

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
B. Geology, Soils, and Seismicity			
Impact B.1: In the event of a major earthquake in the region, people or structures could be exposed to the potential adverse effects of seismic ground shaking.	Less than Significant	None Required	
Impact B.2: The proposed Project would be constructed on sloping terrain and could be subject to slope instability and potential landsliding.	Less than Significant	None Required	
Impact B.3: Elements of the Project could be located in soils which are either weak, expansive, or prone to creep. These problematic soils could cause long term localized failure of the proposed structures resulting in loss of property, failure of water conveyance facilities, and/or slope failure.	Potentially Significant	Mitigation Measure B.3: As recommended by the applicant's geotechnical engineer: the applicant shall adhere to the recommendation provided by the Project geotechnical engineer to reduce the adverse effects of weak soils, expansive soils and creep-prone soils. The detrimental effects of weak soils shall be remediated by strengthening the soils during grading (i.e., excavating the weak soils and replacing them with properly compacted engineered fill). Expansive soils shall be treated by pre-swelling the expansive soils and covering them with a moisture fixing and confining blanket of properly compacted select fill as defined in the geotechnical recommendations. In order to effectively reduce foundation and slab heave given the expansion potential of the site's soils and bedrock, the applicant shall install a blanket thickness of 30 inches. In exterior slab and paved areas, the select fill blanket shall be no less than 12 inches thick. Fill and/or foundation support shall be used below the creeping soils and, outside buttressed areas, the applicant shall design the foundations to resist stresses imposed by the creeping soils. The applicant shall incorporate into the final Project design plans the recommended geotechnical remedies to correct problematic soils and these controls shall become part of the project.	Less than Significant
Impact B.4: The Project could result in substantial erosion or the loss of topsoil due to concentrated runoff during construction and after Project completion.	Potentially Significant	Mitigation Measure B.4: As recommended by the applicant's geotechnical engineer: The applicant shall implement all geotechnical recommendations associated with diverting surface runoff around slopes and improvements, providing positive drainage away from structures, and installing energy dissipaters at discharge points of concentrated runoff. This can be achieved, for example, by constructing the building pad several inches above the surrounding area and conveying the runoff into manmade drainage elements or natural swales that lead down gradient of the site. The applicant shall incorporate recommended erosion controls into the final Project design plans and the controls shall become part of the Project.	Less than Significant
Impact B.5: The proposed winery buildings, wine caves, and tank pads could be located on unstable geologic materials, which would increase the potential occurrence of ground failure or landsliding.	Less than Significant	None Required	

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
B. Geology, Soils, and Seismicity (cont.)			
Impact B.6: Elements of the project could be located on soils incapable of adequately supporting the use of septic tanks and leach fields.	Less than Significant	None Required	
Impact B.7: The Project could contribute to cumulative impacts with respect to geology, soils or seismicity.	Less than Significant	None Required	
C. Hydrology and Water Quality			
Impact C.1: Construction and operation of the proposed Project could disturb surface soil and the underlying sandstone bedrock, thereby increasing the rate of erosion and potential for sediment to be released to Mark West Creek.	Less than Significant	None Required	
Impact C.2: If improperly treated or disposed, Project wastewater generated during operation could reduce the water quality of surface water and/or groundwater.	Less than Significant	None Required	
Impact C.3: The Project's proposed pumping of groundwater from the aquifer could diminish the dry season base flow to Mark West Creek.	Less than Significant	None Required	
Impact C.4: The Project's proposed pumping of groundwater from the aquifer could lower water levels in other supply wells resulting in reduced yield or well damage, or draw surface flow from local surface waters, including creek and ponds.	Less than Significant	None Required	
Impact C.5: The proposed Project rainwater harvesting would result in the reduction of surface water available to the Upper Mark West Watershed.	Less than Significant	None Required	
Impact C.6: The Project could contribute to cumulative impacts on hydrology and water quality.	Less than Significant	None Required	

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
D. Biological Resources			
<p>Impact D.1: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species.</p>	Potentially Significant	<p>Mitigation Measure D.1a: The populations of narrow-anthered California brodiaea shall be salvaged and transferred at a 1:1 ratio to suitable habitat on the Cornell Farms property, preferably adjacent to the proposed winery development site. Prior to plant salvage efforts, a five-year mitigation plan shall be developed by a qualified biologist in coordination with the CDFG, and appropriate authorizations from the CDFG shall be obtained. The mitigation plan shall be commenced to the satisfaction of the CDFG and County prior to the initiation of construction of the proposed Project.</p> <p>The mitigation plan shall include information regarding the mitigation site (i.e., site selection process, including alternative sites considered, site location and description, and site preparation activities), procedures for collecting and transferring plants, and maintenance activities (e.g., weeding, erosion control, herbivore control, supplemental watering, etc.), schedule, and methods for determining the need for maintenance. Monitoring objectives and goals, performance criteria, sampling techniques and procedures, monitoring schedule, remedial measures, reporting requirements, long-term protection measures, and funding sources shall also be included in the mitigation plan, as well as any additional information not listed here but identified in the mitigation plan annotated outline developed by the CDFG (CDFG, 1990). The performance criteria shall include, but are not limited to, maximum feasible survival rate of transferred plants, absence of very invasive non-native plant species, and a self-sufficient population with no net decrease in the current number of plants at the end of five years.</p> <p>Mitigation Measure D.1b: Prior to commencement of any construction activities, including construction equipment and vehicle mobilization, a mandatory environmental education program for construction personnel shall be conducted by a qualified biologist. The program shall cover special-status species that are known or have the potential to occur in the vicinity of the proposed winery development site, as well as other sensitive biological resources (e.g., sensitive natural communities, federal and state jurisdictional waters), and the required mitigation measures that must be followed by all construction personnel to avoid or minimize Project effects on these resources. The program shall also cover the penalties for noncompliance with the biological mitigation requirements.</p> <p>The Project applicant shall ensure that the contractor is responsible for ensuring that construction personnel adhere to the biological mitigation requirements. If new construction personnel are added to the Project, the applicant and applicant's contractors shall ensure that all new personnel receive the mandatory training prior to starting work. This may take the form of written instruction and/or use of a video prepared by the qualified biologist covering the same material</p>	Less than Significant

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
D. Biological Resources (cont.)			
Impact D.1 (cont.)		<p>presented in the initial education program. At a minimum, the mitigation requirements that shall be followed by construction personnel include:</p> <ul style="list-style-type: none"> a. Construction personnel will adhere to designated limits of the proposed winery development site and will not go outside these limits. b. Project-related vehicles and construction equipment will restrict off-road travel to designated work areas. c. The contractor will provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage will be removed daily from the work area. Construction personnel will not feed or otherwise attract wildlife to the work area. d. No pets or firearms will be allowed in the work area. e. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated work areas. 	
Impact D.2: The proposed Project could have a substantial adverse effect on sensitive natural communities.	Potentially Significant	<p>Mitigation Measure D.2a: Implement Mitigation Measure D.1b (environmental education program).</p> <p>Mitigation Measure D.2b: Prior to commencement of any construction activities, including construction equipment and vehicle mobilization, the Project applicant shall retain a certified arborist to tag and assess all trees within the limits of the proposed rain gardens. Trees shall be tagged to correspond with a tree exhibit map. Also, the genus and species of the trees, size of the trees at DBH, and structure and vigor of the trees shall be determined, and an evaluation of the trees' resource value (i.e., locating trees deserving protection) shall be completed. All trees shall receive a visual tree assessment (VTA – meaning tree observations shall be from the ground and that no special devices [e.g., increment borers, drills, resistographs, etc.] shall be used). Following completion of the tree survey, the arborist shall prepare a report that shall at a minimum provide a description of the general character of the trees within the limits of the proposed rain gardens and identify opportunities and constraints for preservation. The report shall be provided to the County for review.</p> <p>Based on the results of the tree survey, the proposed rain gardens shall be sited, to the maximum extent feasible, to avoid impacts to oak woodlands and individual oak trees. If avoidance is not feasible, the Project applicant shall transfer or plant new oak trees consistent with Mitigation Measure D.2c below.</p>	Less than Significant

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
D. Biological Resources (cont.)			
<p>Impact D.2 (cont.)</p>		<p>Mitigation Measure D.2c: In addition to transferring and planting new oak trees to mitigate for those removed by construction of the Project, the following measures shall be implemented:</p> <ol style="list-style-type: none"> a. A seven-year mitigation plan shall be developed by a certified arborist in coordination with the CDFG, and appropriate authorizations from the CDFG shall be obtained, prior to transferring and planting new oak trees. The mitigation plan shall be commenced to the satisfaction of the CDFG and County prior to the initiation of construction of the proposed Project. The mitigation plan shall include information regarding the mitigation site (i.e., site selection process, including alternative sites considered, site location and description, and site preparation activities), procedures for acorn collection, transplanting and planting trees, and maintenance activities (e.g., weeding, erosion control, herbivore control, supplemental watering, etc.), schedule, and methods for determining the need for maintenance. Monitoring objectives and goals, performance criteria, sampling techniques and procedures, monitoring schedule, remedial measures, reporting requirements, long-term protection measures, and funding sources shall also be included in the mitigation plan, as well as any additional information not listed here but identified in the mitigation plan annotated outline developed by the CDFG (CDFG, 1990). The plan shall provide for the survival of a minimum of three surviving trees for each tree removed or transplanted as a result of the project at the end of the seven-year monitoring period. b. The Project applicant shall permanently protect oak woodland habitat, at a 2:1 ratio on the current Cornell Farms property. The oak woodland, shall be protected under a permanent conservation easement or fee title dedication, to be approved by the CDFG and County, and implemented prior to the issuance of building, grading, or other development permits. A minimum of 0.68 acres shall be protected to compensate for the 0.34 acres disturbed by the proposed winery site. Additional acreage shall be protected at the same ratio for any further impacts to oak woodlands as determined by the County and the vegetation alliance maps once the grading and drainage plans are finalized. The easement or agreement shall specify that the oak woodland habitat is to remain in perpetuity, and shall specify the land management and maintenance practices designed to protect the habitat, a baseline report documenting the existing habitat conditions (i.e. a tree survey conducted by a certified arborist), a habitat monitoring plan, designate the party responsible for all actions related to management and maintenance, and specify limitations and restrictions on land use (i.e. access, fencing, grazing, tree planting or pruning, response to catastrophic events such as wildfire or pest invasion). 	

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
D. Biological Resources (cont.)			
Impact D.2 (cont.)		<p>Mitigation Measure D.2d: The following measures shall be implemented by the Project applicant to avoid potential indirect impacts to sensitive natural communities:</p> <ol style="list-style-type: none"> a. Protective chain-link fencing at least six feet high with signs and flagging shall be erected around all preserved vegetation communities where adjacent to vegetation clearing and grubbing, grading, or other construction activities. The protective fence shall be installed at a minimum of five feet beyond the tree canopy dripline of 20 feet beyond wetlands and other waters. The intent of protection fencing is to prevent inadvertent limb/vegetation damage, root damage and/or compaction or encroachment by construction equipment. The protective fencing shall be depicted on all construction plans provided to contractors and labeled clearly to prohibit entry, and the placement of the fence in the field shall be approved by a certified arborist and/or qualified biologist prior to commencement of any construction activities. The contractor shall maintain the fence to keep it upright, taut and aligned at all times. Fencing shall be removed only after all construction activities are completed. b. Contractors shall avoid using heavy equipment around the sensitive natural communities. Operating heavy machinery around the root zones of trees would increase soil compaction, which decreases soil aeration and, subsequently, reduces water penetration into the soil. All heavy equipment and vehicles shall, at minimum, stay out of the fenced protected zones, unless where specifically approved in writing and under the supervision of a certified arborist and/or qualified biologist. c. Contractors shall not store or discard any construction materials within the fenced protected zones, and shall remove all foreign debris within these areas. In addition, contractors shall avoid draining or leakage of equipment fluids near fenced protected zones. Fluids such as gasoline, diesel, oils, hydraulics, brake and transmission fluids, paint, paint thinners, and glycol (anti-freeze) shall be disposed of properly. 	
Impact D.3: Development of the proposed Project could have a substantial adverse effect on federally protected wetlands.	Potentially Significant	Mitigation Measure D.3: Implement Mitigation Measures D.1b (environmental education program) and Mitigation Measure D.2d (sensitive community protection).	Less than Significant
Impact D.4: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on California red-legged frog (CRLF).	Less than Significant	None Required	

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
D. Biological Resources (cont.)			
Impact D.5: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on foothill yellow-legged frog (FYLF) and western pond turtle (WPT).	Potentially Significant	Mitigation Measure D.5: Implement Mitigation Measures D.1b (environmental education program) and D-2d (sensitive community protection).	Less than Significant
Impact D.6: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on River Lamprey, Coho Salmon, and Steelhead.	Potentially Significant	Mitigation Measure D.6: Implement Mitigation Measures D.1b (environmental education program) and D.2d (sensitive community protection).	Less than Significant
Impact D.7: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, to the Northern spotted owl (NSO).	Less than Significant	None Required	
Impact D.8: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status birds.	Potentially Significant	<p>Mitigation Measure D.8: The Project applicant shall implement one of the following measures to avoid impacts to nesting birds during construction of the proposed Project:</p> <ul style="list-style-type: none"> a. Conduct vegetation clearing and grubbing, grading, and other construction activities associated with construction of the proposed winery during the non-breeding season (in general, September 1st through January 31st); or b. Conduct preconstruction surveys for nesting birds if construction activities are to take place during the nesting season (in general, February 1st through August 31st). Within the 30-day period prior to ground disturbance activities associated with vegetation clearing and grubbing and grading, a qualified biologist shall conduct weekly surveys, with the last survey being conducted no more than three days prior to the commencement of construction activities to confirm the presence or absence of active nests in the Project vicinity (at least 500 feet around the proposed winery development site, where accessible). If ground disturbance activities are delayed, then additional preconstruction surveys shall be conducted such that no more than three days will have lapsed between the survey and ground disturbance activities. <p>If no active nests are found, no further mitigation would be required following submittal of a survey report letter to the County. However, if active nests are found, species-specific measures shall be prepared by a qualified biologist in coordination with the CDFG, and implemented to prevent the direct loss or abandonment of the active nest. At a minimum, construction activities in the vicinity of a nest shall be deferred until the young have fledged, and an exclusion buffer zone shall be established. A minimum exclusion buffer zone</p>	Less than Significant

**TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
D. Biological Resources (cont.)			
Impact D.8 (cont.)		of 50 feet is typically recommended by CDFG for songbird nests, and 200 to 500 feet for raptor nests, depending on the species and location. The perimeter of the exclusion buffer zone shall be fenced or adequately demarcated with staked flagging at 20-foot intervals, and construction personnel shall be restricted from the area. A survey report by the qualified biologist verifying that the young have fledged shall be submitted to the County for review and concurrence prior to initiation of construction activities within the exclusion buffer zone.	
Impact D.9: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status bats.	Potentially Significant	<p>Mitigation Measure D.9: Prior to commencement of any construction activities, including construction equipment and vehicle mobilization, the Project applicant shall retain a qualified biologist (i.e., a biologist possessing a Memorandum of Understanding with the CDFG for handling bats) to survey for bats.</p> <p>If no evidence of bats (i.e., direct observation, guano, staining, strong odors) is found, no further mitigation would be required following submittal of a survey report letter to the County. However, if evidence of bats is found, the Project applicant shall implement the following measures to avoid impacts to bats:</p> <ol style="list-style-type: none"> a. An exclusion buffer zone (acceptable in size to the CDFG) shall be created around active bat roosts during the breeding season (in general, April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected, and no buffer would be necessary. b. Removal of trees showing evidence of bat use shall occur during the period of time least likely to affect bats, as determined by a qualified bat biologist (in general, between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If passive relocation (i.e., excluding bats from roosts) is necessary to prevent impacts to bats due to roost destruction or construction-related disturbances, the relocation shall also be conducted during these periods of time, by a qualified bat biologist in coordination with the CDFG, and appropriate authorizations from the CDFG shall be obtained. c. All special-status bat roosts that are destroyed shall be replaced at a 1:1 ratio with a roost suitable for the displaced species (e.g., bat houses for colonial roosters). The roost shall be monitored for a five year period to ensure proper roosting habitat characteristics (e.g., suitable temperature and no leaks). The roost shall be modified as necessary to provide a suitable roosting environment for the target bat species. 	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
D. Biological Resources (cont.)			
Impact D.10: The proposed Project would not substantially interfere with wildlife movement or impede the use of wildlife nursery sites.	Less than Significant	None Required	
Impact D.11: Development of the proposed Project could conflict with local policies or ordinances protecting biological resources.	Potentially Significant	Mitigation Measure D.11: Implement Mitigation Measures D.1a through D.1b, Mitigation Measures D.2a through D.2d, Mitigation Measure D.8, and Mitigation Measure D.9.	Less than Significant
Impact D.12: The Project could contribute to cumulative impacts on biological resources.	Less than Significant	None Required	

CHAPTER III

Project Description

A. Project Overview

The Project applicant, Guy Davis, representing Cornell Farms, LLC (Cornell Farms), proposes to develop a winery in eastern Sonoma County. The Project applicant has requested the necessary entitlements from the County of Sonoma to enable development of the winery. Approval of this request would grant a use permit for development and operation of the winery, and any approval conditions that are imposed. The proposed winery would have a maximum annual production capacity of 10,000 cases. The County of Sonoma is serving as Lead Agency and is responsible for administering the environmental review for the proposed Project.

B. Project Objectives

Section 15124(b) of the CEQA Guidelines requires that the Project Description of an EIR contain a statement of objectives for the proposed Project. The Project applicant's objectives include the following:

1. Construct and operate a winery capable of producing 10,000 cases of a variety of high quality wines annually, using primarily the wine grapes grown on the existing Cornell Farms vineyards that immediately abut the proposed winery property;
2. Develop caves to reduce the above-ground winery footprint and provide optimum cellar conditions for wine on-site (e.g., temperature and humidity);
3. Operate custom on-site wine production facilities (e.g., small fermentation tanks) to provide maximum flexibility and control in winemaking operations, to provide for optimum wine quality, and reduce transportation time and costs, and associated transportation impacts;
4. Provide for on-site wine tasting (by appointment only and on a limited basis) in proximity to the existing Cornell Farms vineyards to enhance the wine tasting experience for visitors;
5. Reduce water consumption through use of extensive water conservation measures, including rain water harvesting and re-use, wet season groundwater pumping and storage for use during the dry season, and process wastewater treatment and re-use. The intent of these measures is to reduce net water use to below existing use levels; and
6. Develop an environmentally-sensitive project through proper sizing, siting, reduced energy use, and incorporation of stormwater and landscaping improvements, water consumption-reducing technologies in wine production, water conservation measures described above, and other sustainable elements.

C. Project Site and Vicinity Description

Project Location

The Project site is located at 100, 245, 420, 500 and 560 Wappo Road in eastern Sonoma County [Assessor's Parcel Numbers (APNs) 028-250-007, 028-260-041, 028-260-047, 028-260-023 and 028-260-025, respectively] approximately 1½ miles west of the Sonoma-Napa County line (see **Figure III-1**). The property is owned by Cornell Farms. Including the five Project site parcels, Cornell Farms owns a total of seven contiguous legal parcels in the vicinity amounting to 187.08 acres. **Figure III-2** presents Assessor's Parcel location for the Project site and vicinity.¹

Regionally, the Project area is located along the southern flank of Diamond Mountain, part of the Mayacamas Mountain range that separates the Napa and Sonoma valleys. The region's topography is characterized by alternating northwest trending mountain ranges and valleys. The Project area is also located within the upper reaches of the Mark West watershed. The Upper Mark West watershed (approximately 40 square miles total) is designated as a Priority Conservation Area by the Association of Bay Area Governments (ABAG, 2008). Mark West Creek flows south of the Project site from east to west, ultimately discharging approximately 16 miles downstream into the Russian River in the northwest Santa Rosa area.

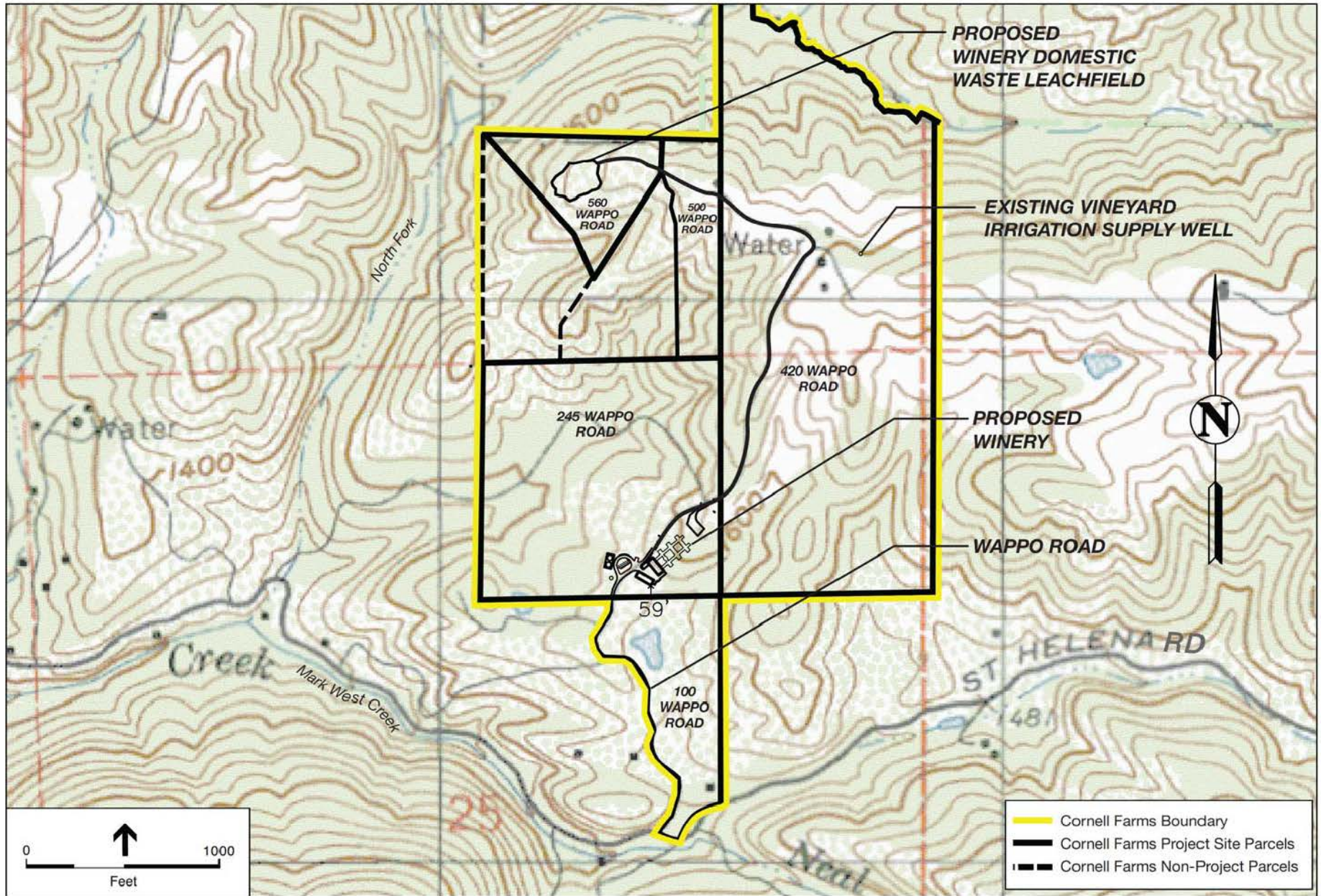
Site Description

Figure III-3 presents an aerial photograph of the Cornell Farms property. The Cornell Farms property contains a variety of improvements, including the Cornell Farms vineyards (approximately 20 acres); several residences and small out-structures, supporting utilities including water wells and water storage tanks, domestic water and vineyard irrigation lines, leachfield/septic systems, overhead electrical lines; access roads; and fencing and drainage improvements. Wappo Road, which is partially paved and partially gravel surface, is a private road and provides primary vehicular access to and within the Cornell Farms property. Large areas of the Cornell Farms property are also undeveloped, containing a variety of forest, woodland, shrubland and grasslands, small drainages, and ponds.

The Cornell Farms property is topographically varied, with elevations ranging from a low of approximately 1,360 feet above sea level (asl) within a deep ravine on the west side of the property, to a high of approximately 1,780 feet asl along a ridge in the northern portion of the property.² The following provides additional detail on each of the Project site parcels.

¹ This EIR describes the environmental setting as it existed at the time the Notice of Preparation (NOP) was published. Since the NOP was published, Cornell Farms has acquired several additional parcels in the site vicinity, including APNs 028-250-006 (115 Wappo Road, 24 acres), 028-250-012 (8450 St. Helena Road, 2 acres), 028-250-014 (8545 St. Helena Road, 2 acres), 028-250-017 (8516 St. Helena Road, 0.38 acres), and 028-250-018 (8565 St. Helena Road, 0.03 acres) – see Figure III-2 for location. No portions of the Project are proposed on these parcels.

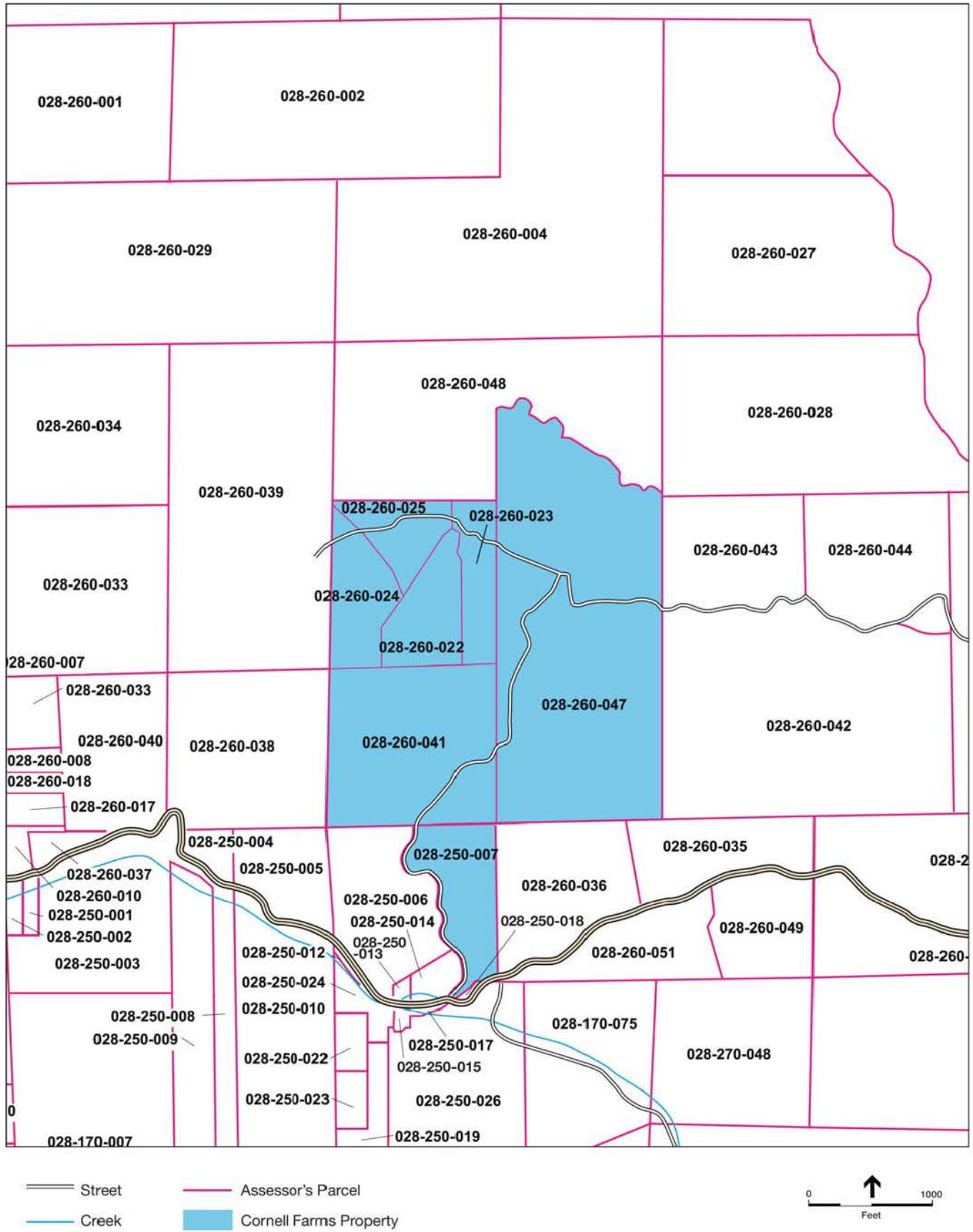
² It should be noted that the topographic contour values presented in Figure III-1 in this EIR (based on U.S. Geological Survey) do not agree with the topographic contour values presented on the topographic maps that were developed by the applicant's surveyor (i.e., the base maps used in Figures III-5, -III-9, -III-10, and III-12 in the Project Description; Figure IV.B-1 in Section IV.B, and those maps in Appendix PD in this EIR). This discrepancy stems from the use of a different vertical datum by the applicant's surveyor in their original survey of the site. Accordingly, all figures presented in this EIR that are based on the applicant's topographic survey note this discrepancy, and all topographic elevations referenced in this text discussion are based on the true elevation asl.



SOURCE: Atterbury & Associates, 2011/ USGS 1980

Henry Cornell Winery . 211996

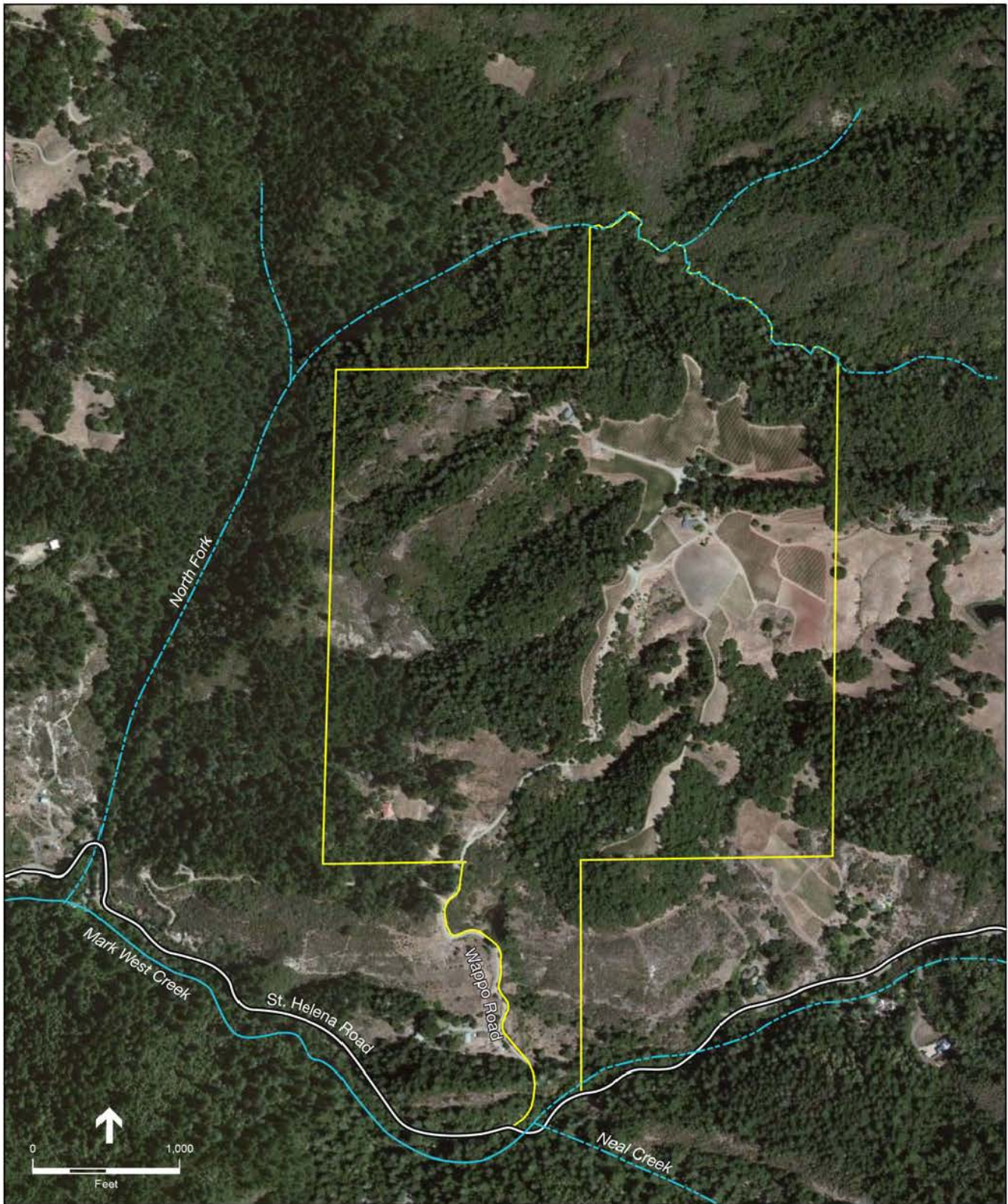
Figure III-1
Project Location Map



SOURCE: Todd Engineers, ESA

Henry Cornell Winery . 211996

Figure III-2
Assessor's Parcel Map of Project Site and Vicinity



- Cornell Farms Boundary
- Creek (approximated from USGS topographic map)**
- Perennial Creek
- - - Intermittent Creek

SOURCE: Sonoma County, 2012; ESRI, 2012, ESA 2012

Henry Cornell Winery . 211996

Figure III-3
Aerial Photograph of Project Site and Vicinity

245 Wappo Road (APN 028-260-041). This 40-acre parcel is characterized by western facing spur ridges and intervening ravines off a southerly trending ridge and knoll. The majority of the proposed winery development would be located in the southeast portion of this parcel on the undeveloped knoll east of and adjacent to Wappo Road. An ephemeral creek (named Drainage A in this EIR) is located over 70 feet southeast of the winery site, draining southward to a pond on the adjacent 100 Wappo Road property, and then to Mark West Creek. A series of drainages on the western portion of the 245 Wappo Road property drain to a tributary (named Drainage B in this EIR) that extends west and off-site to the north fork of Mark West Creek. Existing site improvements elsewhere on this parcel include a residence, small vineyard, leach field, and water wells and stormwater control improvements.

560 Wappo Road (APN 028-260-025). This 7.2-acre parcel is among the northernmost parcels of the Cornell Farms holdings. The parcel is largely undeveloped except for the access road. The winery's proposed leachfield would be located within a stand of Douglas fir and oak trees on this property.

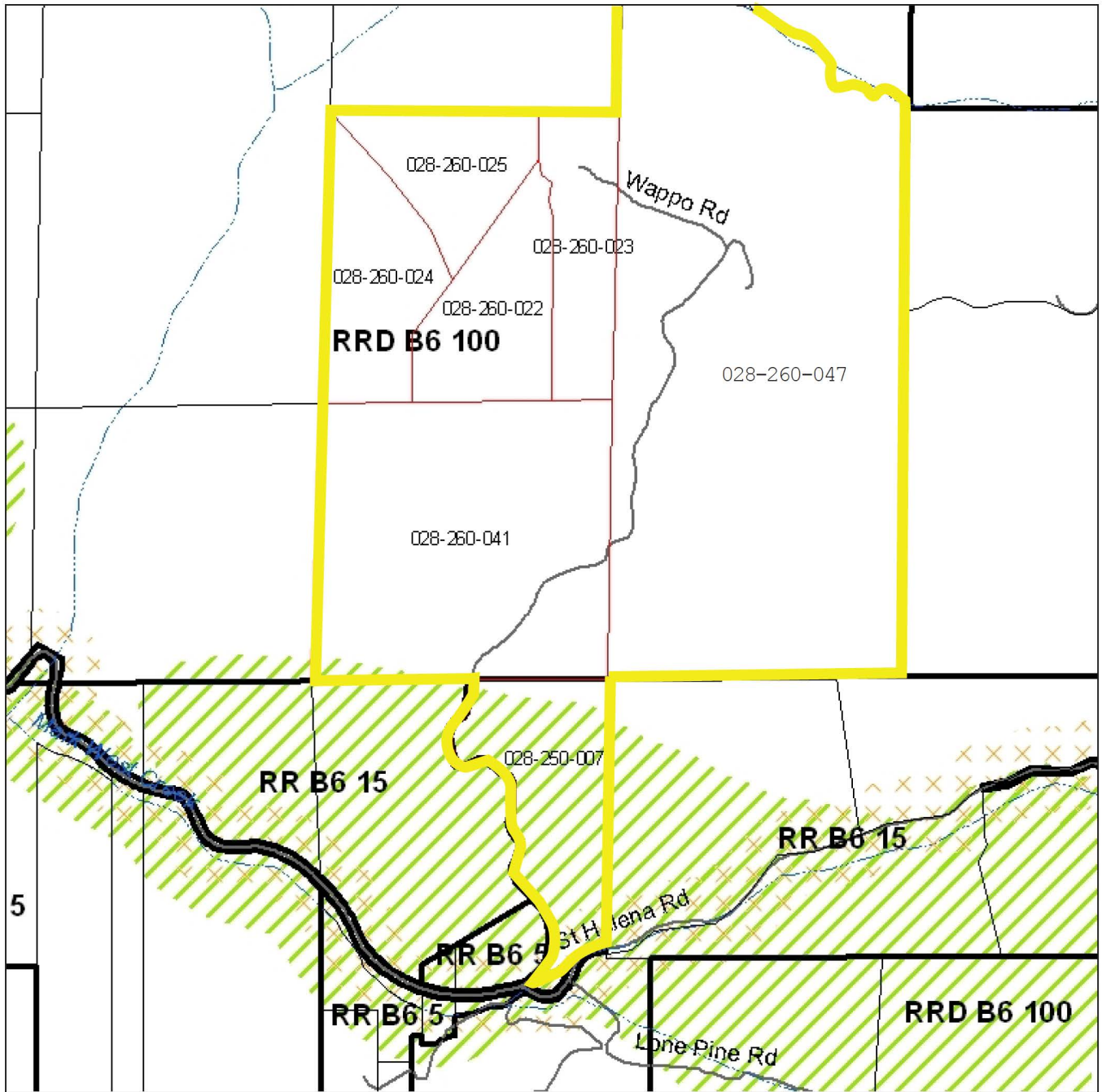
420 and 500 Wappo Road (APNs 028-260-047 and 028-260-023). A proposed domestic wastewater pipeline would be installed beneath Wappo Road on these parcels between the proposed winery and leachfield. The 420 Wappo Road property (94.5 acres) contains the majority of the Cornell Farms vineyards, as well as a home, water wells and septic system. The north fork of Mark West Creek forms the northern boundary of this parcel. The 500 Wappo Road property (6.5 acres) is undeveloped with the exception of a home, the access road, several above-ground water storage tanks, a shed, and a water well and septic system. The Bothe-Napa Valley State Park also forms the northern boundary of the 420 and 500 Wappo Road parcels.

100 Wappo Road (APN 028-250-007). This 15-acre parcel is the southernmost parcel of the Cornell Farms holdings. A number of proposed grading and drainage improvements to Wappo Road would occur on this property as part of the Project. This property contains a spring-fed pond, residence, water well and septic system.

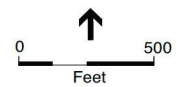
Existing Land Use Controls

The *Sonoma County General Plan 2020* land use designation for the 245, 500, 520 and 560 Wappo Road properties is Resource and Rural Development, 100-acre density. The General Plan land use designation for the 100 Wappo Road property is Rural Residential, 15-acre density (Sonoma County, 2008a).

The County zoning for the Project site and vicinity is illustrated in **Figure III-4**. Zoning for the 245, 500, 520 and 560 Wappo Road properties is RRD (Resource and Rural Development), B6-100-acre density, BR (Biotic Resources); and zoning for the 100 Wappo Road property is RR (Rural Residential), B6-15 acre density, BR, Scenic Resources (SR) (Sonoma County, 2012).



- ✕ ✕ Scenic Resource Combining District
- ▨ Biotic Resource Combining District
- ▬ Cornell Farms Boundary
- Cornell Farms Parcels



SOURCE: Sonoma County PRMD, ESA, 2012

Henry Cornell Winery . 211996

Figure III-4
Zoning of Project Site and Vicinity

The Project site is also located within the boundary of the *Franz Valley Area Plan*, which is consistent with the County General Plan.³ The *Franz Valley Area Plan* land use designation for 245, 500, 520 and 560 Wappo Road is Resource Conservation, and for 100 Wappo Road is Rural Residential, 15-acre density. Both the Resource Conservation designation of the Franz Valley Area Plan and the Resource and Rural Development designation of the General Plan consider agriculture and related uses as suitable land uses (Sonoma County, 2008b).

Nearby Off-Site Land Uses

Land uses in the Project vicinity are rural, and large areas surrounding the Project site contain forest, woodland and/or scrubland. The main stem of Mark West Creek is located just south of Cornell Farms, and meanders roughly parallel to St. Helena Road in the Project vicinity. The north fork of Mark West Creek flows north and west of the Cornell Farms property. The westernmost portion of the 1,900-acre Bothe-Napa Valley State Park abuts the northern boundary of the Cornell Farms property. Much of the area south of Wappo Road is forested and divided into large-acre residential lots.

A number of rural residential land uses are concentrated along the St. Helena Road corridor in the Project vicinity. The nearest neighboring residence is located at 115 Wappo Road, just west of the Cornell Farms' 100 Wappo Road property, although approximately 1,100 feet from the site of proposed winery development. Another winery and vineyard development, Pride Mountain Vineyards, is located approximately one-half mile east of the Project site.

D. Project History

There have been several previous proposals to develop a winery on Cornell Farms' parcels, for which the County has conducted environmental review pursuant to CEQA. The first winery use permit application (UPE03-0092) was filed in October 2003 for a proposed winery with a maximum annual production of up to 20,000 cases on the 420 Wappo Road property. In December 2004, the County prepared a Mitigated Negative Declaration (MND) for this project, and on February 10, 2005, the Sonoma County Board of Zoning Adjustments (BZA) adopted the MND and approved the proposed winery for a maximum annual production of 10,000 cases on the 420 Wappo Road parcel. On February 22, 2005, an appeal of the BZA approval was filed.

In July 2005, Cornell Farms purchased the adjacent parcel at 245 Wappo Road. The applicant subsequently withdrew the original use permit application and submitted a new application (UPE07-0008) on February 7, 2007, proposing to relocate the site of the winery to the 245 Wappo Road parcel. In October 2008, a proposed MND was prepared for a proposed winery at the 245 Wappo Road parcel that included an 18,700 square foot (sf) winery building, 22-space

³ Originally adopted in 1979 as the *Franz Valley Specific Plan* and intended to provide an intermediate level of detail between the General Plan and site development plans within a 91,520-acre area in northeastern Sonoma County, it has since been revised to be made consistent with the current General Plan, and readopted as the *Franz Valley Area Plan*.

parking area and leach field west of Wappo Road, and an 8,700 sf cave and other supporting facilities on the knoll east of Wappo Road.

In response to the concerns raised regarding geology and hydrology, the applicant undertook further geologic investigation and revised the project, proposing to develop the leach field at the Cornell Farms 560 Wappo Road property instead, and install a pipeline beneath Wappo Road to convey the treated water from the proposed domestic wastewater treatment facility to the new leach field location. The applicant also purchased the 100 Wappo Road parcel, and proposed to offset winery water use by demolishing the existing residence on this property and relinquishing in perpetuity the right to install vineyards, or build any new structure at 100 Wappo Road (for which a building permit is required); riparian rights to withdraw water directly from Mark West Creek; and the right to use water from the on-site spring-fed pond or well (other than fire protection); all of which would be formalized in a Conservation Easement.

In October 2009, a Recirculated MND was prepared for this revised project. The County engaged additional geotechnical peer review of the applicant's geotechnical studies. Based on this additional review, in February 2010 the applicant agreed to relocation of the site of the proposed winery building. As a result, in May 2010, the applicant revised the project to relocate the proposed winery building to the knoll on the east side of Wappo Road. The revised winery development proposal included two winery buildings of a net reduced size compared to the previous version of the project (6,700 sf), a slightly larger proposed cave (10,200 sf), and reduced parking (8 spaces). The revised project included the previously proposed leach field at 560 Wappo Road and proposed water offsets at 100 Wappo Road. In addition, the project proposed to collect and store runoff water from project buildings in two on-site water storage tanks west of Wappo Road (with a total 140,000 gallon capacity), and proposed to not pump groundwater for the winery during the months of August through October.

On August 9, 2010, a MND was prepared for the project as further revised (included as Appendix B in this EIR). On September 23, 2010, the Sonoma County Board of Zoning Adjustments (BZA) adopted the MND and approved the winery project for a maximum annual production of 10,000 cases. On September 28, 2010, an appeal of the BZA approval was filed, citing a range of potential issues associated with geology, hydrology, biology and traffic. Prior to the appeal hearing, the applicant and the County agreed to have an EIR prepared for the Project to facilitate full public disclosure. The applicant has also conducted additional biological and geotechnical investigation of the Project site. The applicant now believes that the extensive water conservation features proposed as part of the Project would sufficiently address potential concerns about hydrologic impacts, and as a result, the applicant has removed from its proposed Project the previous proposal for a water conservation easement on the 100 Wappo Road property. The following section provides a full description of the Project as currently proposed.

E. Project Characteristics

Proposed Winery Operation and Features

The proposed winery site plan is illustrated in **Figure III-5**. The Project would include new building development; a wine cave; access and parking improvements; various Project-related infrastructure improvements for stormwater management, including rainwater harvesting and storage, wastewater treatment, conveyance and disposal; and landscaping improvements.

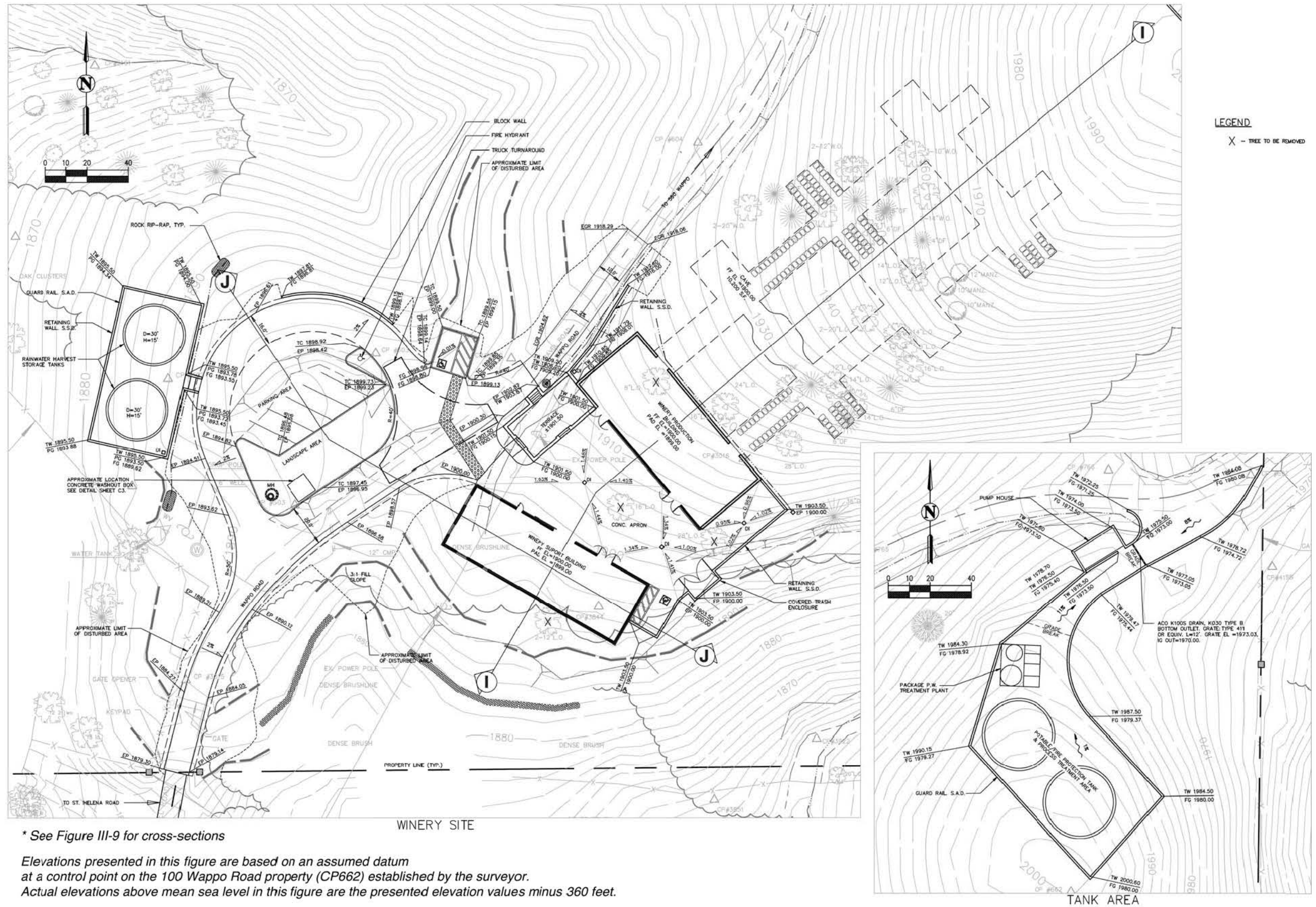
The proposed winery would have a maximum annual production capacity of 10,000 cases. At maximum production, it is estimated that approximately 150 tons of grapes would be processed annually at the winery to produce the wine. The Project sponsor proposes to primarily process grapes grown on the Cornell Farms vineyards, but would also purchase grapes from other vineyards to enhance the wine variety produced at Cornell Farms. The existing vineyards on the Cornell Farms property at 420 Wappo Road are capable of providing approximately 100 tons of grapes per year. Consequently, under the maximum production scenario, the existing vineyards on the Cornell Farms property would provide approximately two-thirds of the required grapes, and the balance (one-third, or 50 tons) could be imported annually to the winery from one or more off-site vineyard locations. However, there may be years in which no grapes would be imported, or in which less than this total are imported. The existing vineyard and its maintenance currently operate under a separate permit from the proposed winery, and are not part of the Project (see however, proposed winery water conservation and storage features that would reduce the existing groundwater use associated with these vineyards).

Because the proposed winery would use the grapes from the adjoining Cornell Farms vineyards, the Project would eliminate existing off-site hauling of wine grapes from these vineyards. However, under conditions where annual winery production would exceed the annual grape production capacity at Cornell Farms vineyards (i.e., when winery production exceeds approximately 100 tons per year), some grapes would be hauled to the winery site from one or more off-site vineyards.

Typical hours of operation of the winery, including the tasting room, would be weekdays, 8:00 a.m. to 5:00 p.m. However, during harvest season (typically between September 15 and November 1), the winery could operate up to seven days a week, 24 hours a day for wine production. All wine tasting at the winery would be by appointment only, and limited to a maximum of 15 guests at a time (and no more than 15 guests on any given day).

In addition, up to 10 special events would be allowed per year at the winery (e.g., for hosting dinners for sales and marketing representatives), with a maximum of ten guests per event. Special event days would not coincide with days when typical daytime wine tasting would occur. The special event days could occur on weekdays or weekends, and would end by 10:00 p.m.

The winery would require three full-time employees, with up to four additional employees during harvest season.



* See Figure III-9 for cross-sections

Elevations presented in this figure are based on an assumed datum at a control point on the 100 Wappo Road property (CP662) established by the surveyor. Actual elevations above mean sea level in this figure are the presented elevation values minus 360 feet.

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Winery Buildings and Wine Cave

Figure III-6 through **Figure III-8** present plans and elevations of the proposed winery buildings. The winery would include two single-story buildings on the knoll just east of Wappo Road totaling 6,700 sf, including a winery production building and winery support building. The 3,500 sf winery production building would house crushing and fermentation facilities. The 3,200 sf winery support building would include the winemaker's office, laboratory, mechanical equipment, and space for bottling and case good storage. The primary winery production equipment would include a stemmer/crusher, sorting table, press, wine pump, glycol chiller, 12 closed top steel fermentors each with a three-ton capacity, and up to 36 one-ton oak rotary fermentors. A backup propane-powered generator would be located either adjacent to the winery production building, or alternately, at a location to the northeast at the proposed potable/fire protection water tank pad.

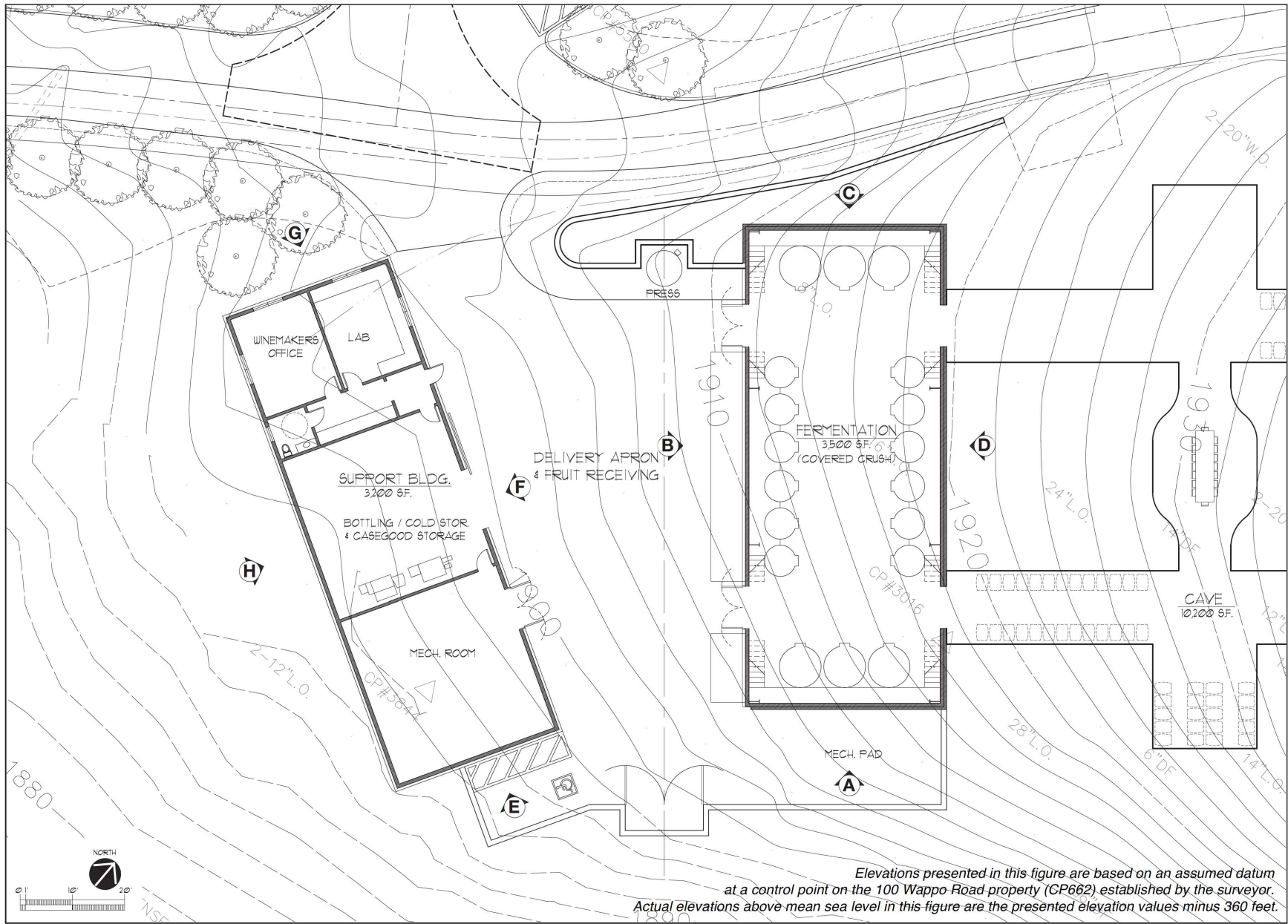
Each building would be of wood-frame construction with gable roofs. Proposed exterior materials would include a corrugated metal roof, earth tone stained wood siding (or simulated wood siding), and natural stone base. The winery production building would measure approximately 33 feet in height from finished floor to top of roof frame. The winery support building would measure approximately 23 feet in height from finished floor to apex of roof. Photovoltaic (solar) panels would be installed on the building roofs to reduce Project utility electricity demand.

The two buildings would be located on either side of a concrete apron that would be used for deliveries and shipping. One disabled parking space would be provided adjacent to the winery support building. The primary parking area would be located just west of Wappo Road (see Access and Parking, below, for further detail). A covered terrace would be located adjacent to the winery production building along Wappo Road, and would contain the press. A covered trash enclosure would be located at the rear (south side) of the winery buildings.

A 10,200 sf wine cave would be constructed within the knoll, with the proposed cave portals located adjacent to, and at the same elevation as (approximately 1,540 feet asl), the winery production building. The cave would be used for wine barrel storage, and would contain a wine tasting room. The cave would extend approximately 200 feet horizontally into the knoll from winery production building, would have a 10-foot high ceiling, and would contain multiple passages.

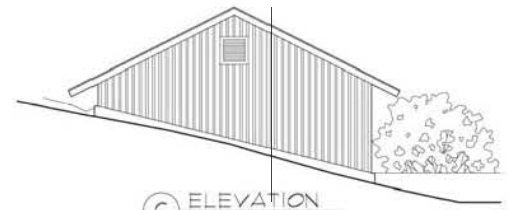
Figure III-9 presents grading cross-sections of the winery site. As shown in Figure III-6, the proposed winery production building would be recessed into the hillside, necessitating a 20-foot high cut to be retained by the adjacent cave portal. As shown in Figure III-5, retaining walls are proposed on the southeast side of the winery buildings, along a portion of Wappo Road and parking area, and at the proposed tank sites. Excess excavated materials would be moved offsite to a permitted disposal site.

All new construction would use fire resistant building materials, and contain fire sprinkler systems and fire hydrants as required by existing regulations.

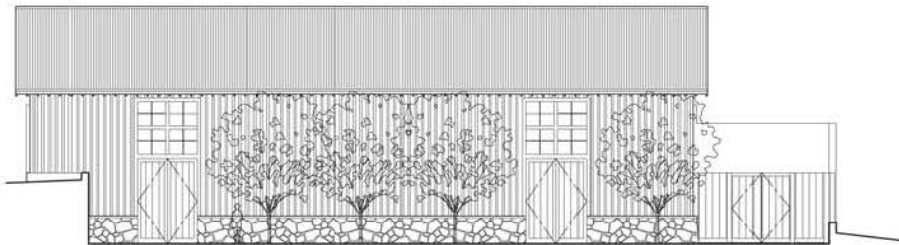




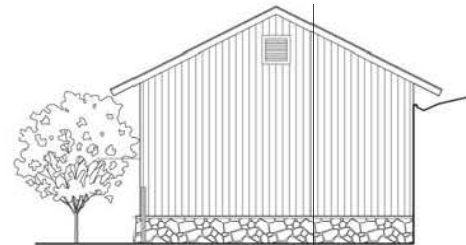
D ELEVATION



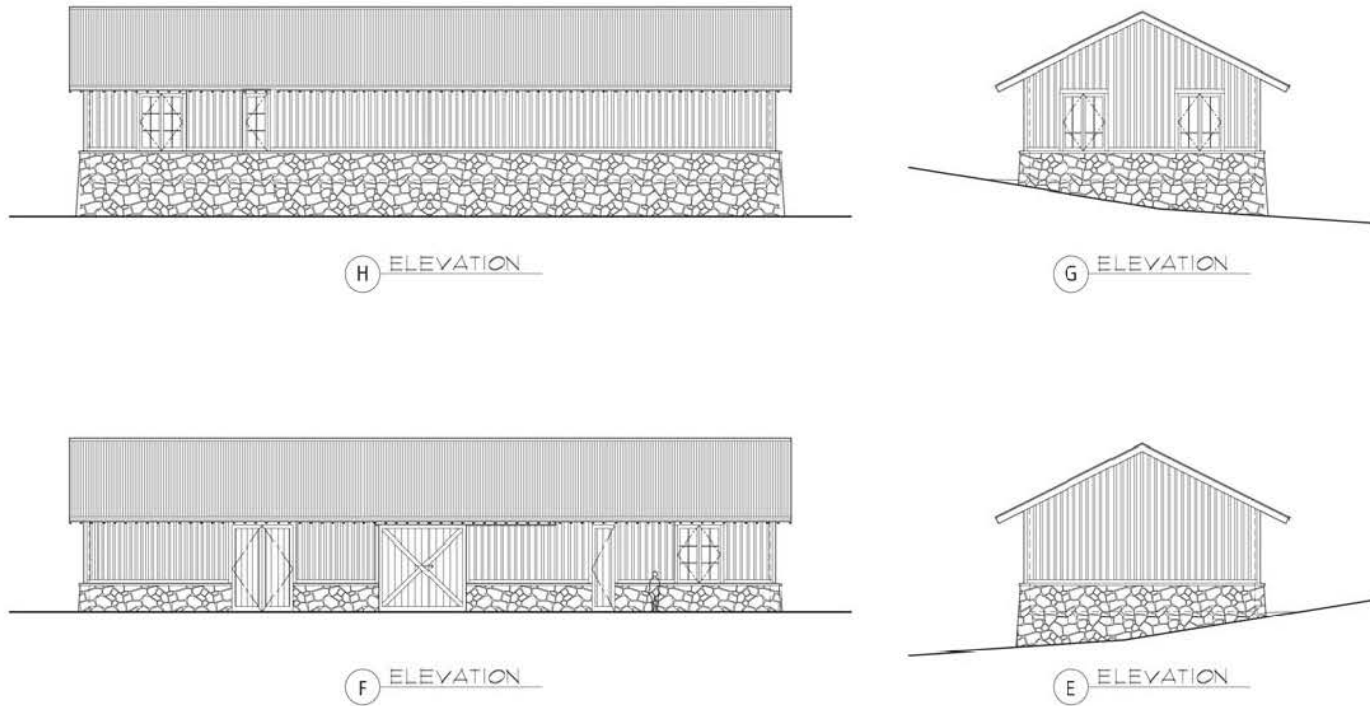
C ELEVATION

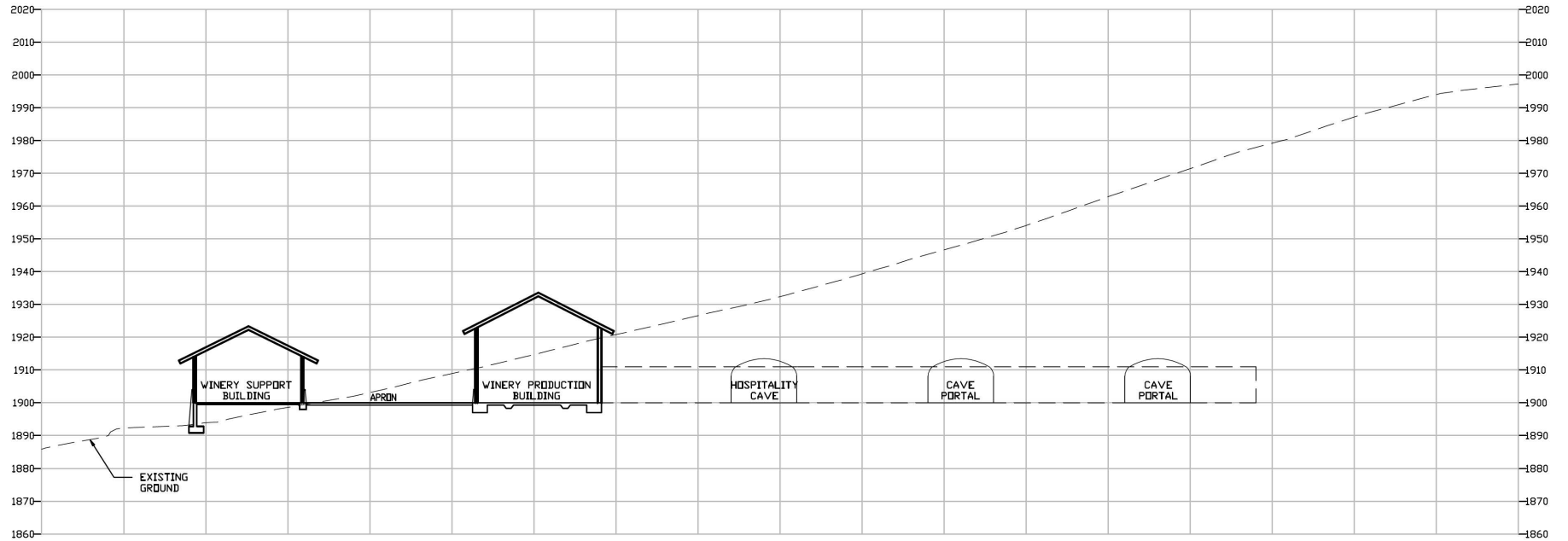


B ELEVATION

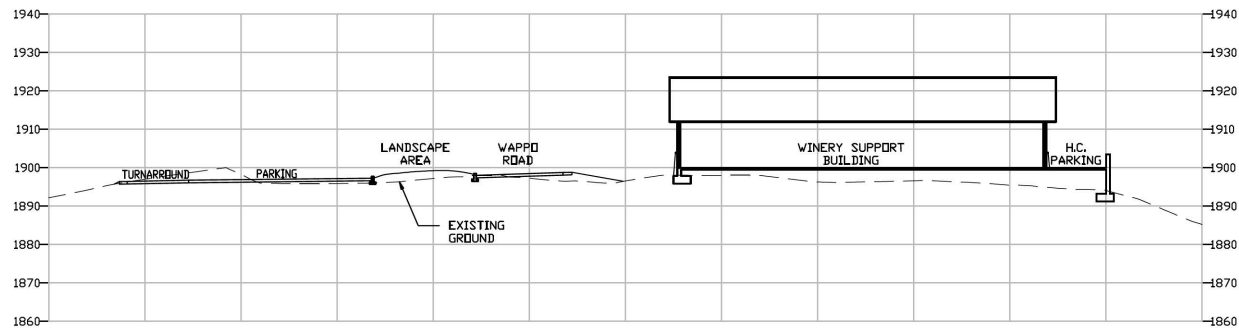


A ELEVATION





SECTION I-I



SECTION J-J

Elevations presented in this figure are based on an assumed datum at a control point on the 100 Wappo Road property (CP662) established by the surveyor. Actual elevations above mean sea level in this figure are the presented elevation values minus 360 feet.

Access and Parking

Vehicular access to the winery would be provided via Wappo Road. Wappo Road would be improved from St. Helena Road to the proposed winery parking area to provide all-weather access and comply with County Fire Safe Standards. Appendix PD, Sheet C5, and C10 through C12 shows plan and profile details of proposed grading on Wappo Road. As shown in these figures, a total of approximately 600 linear feet of lower Wappo Road would be paved in three sections with asphalt concrete. 18-inch wide crushed rock shoulders would also be installed on sections of lower Wappo Road. See also discussion of drainage improvements proposed for Wappo Road, under Stormwater Collection and Control, below.

The primary parking area for the winery would be located just west of Wappo Road across from the winery buildings, and would consist of seven parking spaces surrounded by a driveway. In addition to the single parking space provided adjacent to the winery support building, a total of eight parking spaces are proposed. Permeable pavers would be installed on approximately 300 linear feet of Wappo Road in the vicinity of the winery, as well as the proposed parking area.

Water, Wastewater and Stormwater Improvements

Water Supply and Storage

The winery proposes to use groundwater to supply water for the winery operations. In addition, rainwater harvested at the winery would be used to irrigate the winery landscape vegetation, and to provide supplemental water for irrigation of the existing Cornell Farms vineyards to reduce the existing vineyard groundwater demand.

Groundwater for winery operations would be drawn from an existing well on a ridge located northeast of the winery site (on the 420 Wappo Road property, as shown in Figure III-1). This well was installed on the property in 2004. This well is currently used to provide water for irrigating the Cornell Farms vineyards. An above-ground tank (102,000 gallon capacity) for storing potable water and fire protection water for the winery would be located on a pad near the top of knoll east of Wappo Road, approximately 300 feet northeast of the proposed winery buildings. This water tank would have a height of 16 feet and diameter of 33 feet, and would be constructed of bolted or corrugated galvanized steel. The winery would pump and store up to 102,000 gallons of water from the well during the rainy season and early dry season (i.e., November through July 31) and no pumping for the winery would occur during the dry months of August, September and October. Prior to use at the winery, the groundwater would be aerated with a dissolved oxygen meter to keep the water fresh, and filtered using conventional techniques (e.g., activated carbon/charcoal filters and UV for bacteria).

Rainwater runoff from the winery building roofs, apron between the winery buildings, and tank pads would be harvested during the rainy season. The winery building roof gutter system would be equipped with screens to prevent debris from entering the rainwater harvest system. Rainwater runoff from the apron between the buildings would be collected through drop inlets with Triton treatment filters designed to trap trash, sediment and debris and treat oil and grease. Rainwater runoff from the tank pads would also be collected through drop inlets or strip drains. The

rainwater would first be routed via pipes to a 17,040-gallon underground rain water harvest cistern installed beneath the landscape area adjacent to the proposed parking area. The cistern would be designed to temporarily store the rain water from the 85th percentile 24-hour storm events. A bypass pipe would be installed for storm events larger than the 85th percentile design storm. A pump installed within an outlet manhole would transport the captured rain water to the two proposed on-site above-ground water storage tanks (total 140,000 gallon capacity) located on the west side of the parking area. The two above-ground rainwater harvest tanks would have a height of 15 feet and diameter of 30 feet, would be constructed of bolted or corrugated galvanized steel, and faced with wood planks for visual screening.

The collected rain water would provide water to establish and maintain the drought-resistant winery landscaping. The stored rain water would also provide supplemental water for irrigation of the Cornell Farms vineyards in lieu of drawing that amount of water from the existing supply well. Prior to its use for irrigation, the harvested rain water oxygen would be aerated with a dissolved oxygen meter, and a basic sand or other membrane filter.

The winery would also use treated winery process water to provide additional supplemental water for the existing Cornell Farms vineyards (see discussion under Wastewater Treatment and Disposal, below).

The proposed winemaking operations would incorporate a number of water conservation measures. The two largest uses of water in the winery operations would be for cleaning/sanitizing and barrel soaking/maintenance. The proposed winery would use ozone instead of caustic/citric solutions for sanitizing, and use steam for barrel soaking/maintenance to reduce water demand.⁴

Wastewater Treatment and Disposal

Two sources of wastewater would be generated and treated at the winery: winery process wastewater and domestic wastewater.

The winery process wastewater would be collected and pumped to a fully enclosed aerobic package treatment plant located on the knoll northeast of the proposed winery buildings, where it would be clarified and treated in conformance with applicable Regional Water Quality Control Board (RWQCB) standards. The winery process wastewater would first undergo pretreatment by being passed through stainless steel screens, and then conveyed to a clarifying tank for solids separation. The wastewater would then be pumped to the primary treatment system, where it would undergo pH control (to obtain a pH between 6.0 and 9.0).⁵ The process water would then be treated using an equalization and sludge digestion tank and aeration basin. Following primary treatment, the process water would then be stored in an enclosed, approximate 46,000-gallon capacity water tank (eight feet in height by 30 feet in diameter) at this site, and then pumped

⁴ Sanitizing winery equipment using conventional methods requires washing with a caustic solution, rinsing with water, then washing with a citric solution, and then rinsing with water again. In contrast, the proposed use of water to which ozone has been added would achieve sanitation, but with a single pass, using substantially less water. In addition, traditional barrel maintenance involves several gallons of water per barrel, whereas the proposed use of a steam generator would substantially reduce water use per barrel cleaned.

⁵ pH (Potential Hydrogen) is a measure of the acidity or alkalinity of the water.

through a filter and conveyed to the Cornell Farms vineyards irrigation system to provide supplemental water for the vineyards. Stems and pomace from the winery process wastewater would be screened, collected and placed in a compost area on the 560 Wappo Road property, and then reclaimed as a soil amendment in the vineyards.

The domestic wastewater would be collected into a conventional concrete septic tank and then pumped to the new leach field at the 560 Wappo Road property site, where it would be pre-treated and then disposed at the leach field. A percolation test for this system was approved by PRMD Well and Septic Division on June 23, 2009 (Permit #SEV09-0223). The domestic wastewater would be conveyed to the leach field via an approximate 3,000 foot long pipe installed beneath Wappo Road.

A pump house for the fire suppression system would be located just off Wappo Road adjacent to the treatment plant.

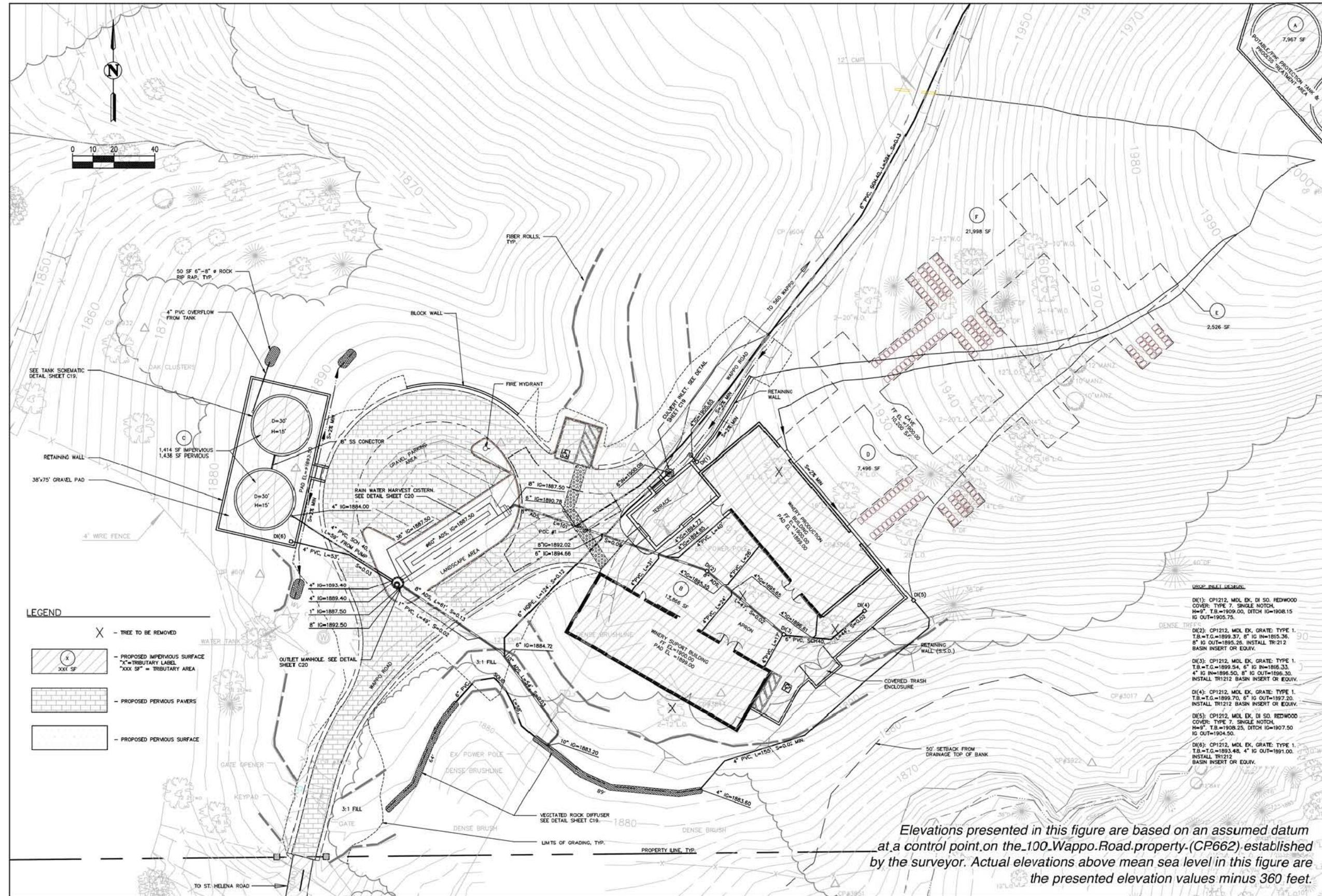
Stormwater Collection and Control

The proposed stormwater system site plan for the winery is presented in **Figure III-10**, and additional detail is provided in Appendix PD. As discussed under Water Supply and Storage, above, rainwater collected from the winery building roofs, apron, terrace, tank pads and pumphouse building roof would be stored and used as the water supply source for irrigation of the winery landscaping and as a supplemental water source for irrigation of the Cornell Farms vineyards. All other stormwater runoff occurring in the vicinity of the winery would either infiltrate into the ground, or flow to storm drains, culverts, and natural drainages. As shown in Figure III-7, certain areas within the winery site would contain drop inlets where stormwater runoff would be collected, and routed through pipes to vegetated rock diffusers for stormwater energy dissipation.

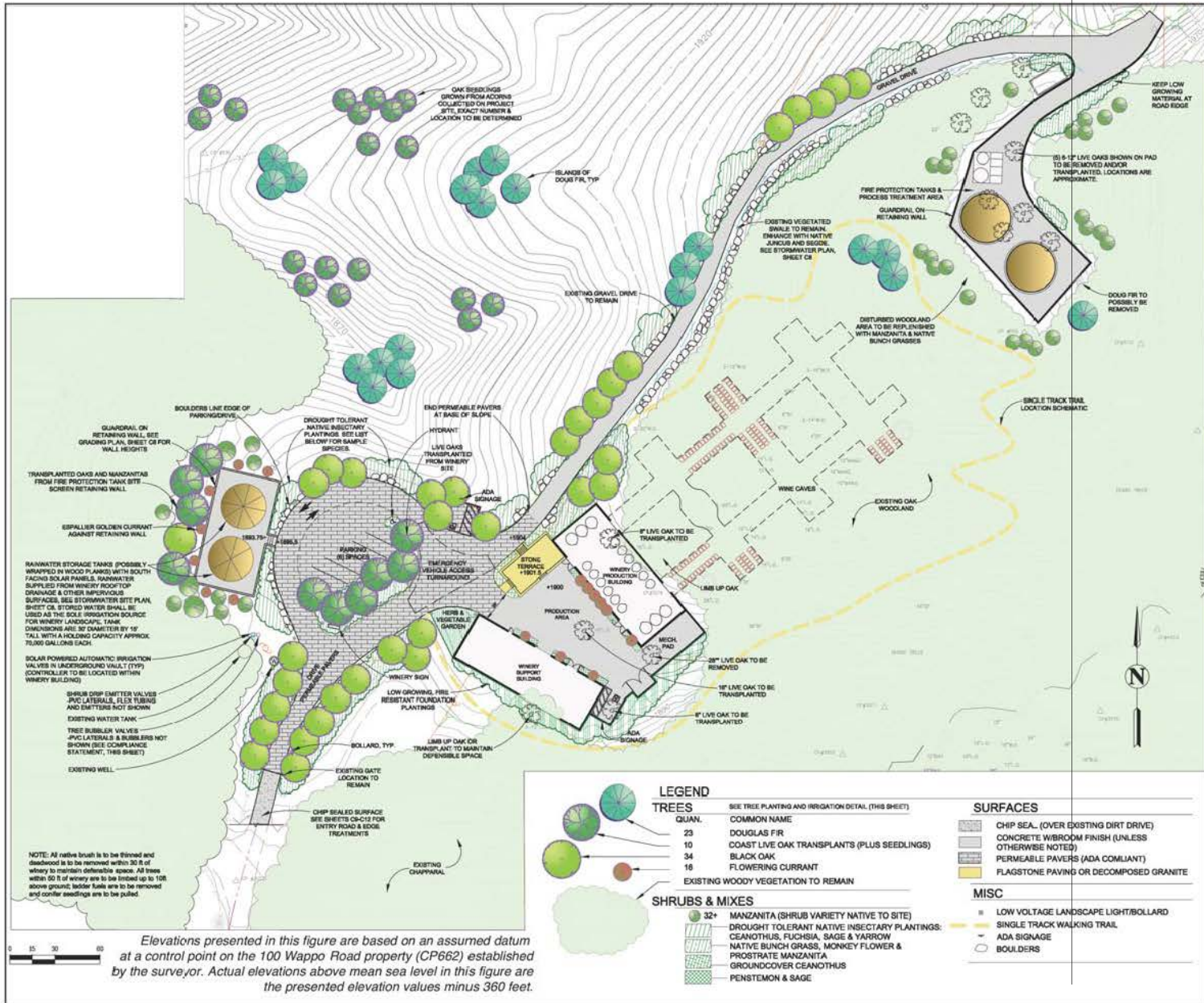
Figure III-11 and Appendix PD, Sheets C10 through C12 illustrate proposed stormwater improvements on the lower portion of Wappo Road. As shown in these figures, rain gardens and vegetated buffers would also be installed along Wappo Road to collect and treat stormwater runoff, and crushed rock shoulders would be installed for stormwater energy dissipation. The proposed rain gardens would be small-scale soil- and plant-based features that would provide for the capture, treatment and infiltration of stormwater runoff. The vegetated buffers would consist of gently sloping vegetated areas and would be used to slow and treat stormwater runoff primarily from proposed paved portions of Wappo Road.

Landscaping

Figure III-12 illustrates the proposed preliminary landscaping plan for the winery site. Under the proposed Project, certain existing trees within the building footprint would be removed and/or transplanted. The preliminary landscaping plan proposes a variety of new trees, shrubs and groundcover to be planted throughout the Project site for aesthetics and erosion control, and to offset the effect of trees that would be removed as a result of development of the winery. As shown in Figure III-12, new trees proposed on the winery site include Douglas fir, Coast live oak



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(transplants), black oak and flowering currant. A variety of drought tolerant native plantings are proposed, including low-growing fire resistant planting in the vicinity of the proposed buildings. As discussed previously, stored rainwater would be the sole irrigation source for proposed winery landscaping. **Table III-1** presents the proposed plant list for the vegetated buffers and rain gardens on Wappo Road.

**TABLE III-1
PROPOSED PLANT LIST FOR VEGETATED BUFFERS AND RAIN GARDENS ON WAPPO ROAD**

Botanical Name	Common Name	Botanical Name	Common Name
VEGETATED BUFFER		RAIN GARDEN	
Trees <i>Quercus kelloggii</i> Black oak <i>Quercus agrifolia</i> Live oak <i>Arbutus menziesii</i> Madrone <i>Acer macropylum</i> Maple		Shrubs and Vines <i>Rosa californica</i> California rose <i>Cornus sericea</i> Dogwood <i>Lonicera hispidula</i> Honeysuckle <i>Physocarpus capitatus</i> Nineback <i>Calycanthus occidentalis</i> Spicebush	
Shrubs and Vines <i>Ceanothus ssp.</i> Ceanothus ^a <i>Rhamnus californica</i> Coffeeberry <i>Baccharis pilularis</i> Coyote brush <i>Ribes californicum</i> Gooseberry <i>Lonicera hispidula</i> Honeysuckle <i>Arctostaphylos ssp.</i> Manzanita ^a <i>Symphoricarpos albus</i> Snowberry <i>Rosa gymnocarpa</i> Wood rose		Herbs <i>Aster chilensis</i> California aster <i>Rudbeckia californica</i> Cone flower <i>Carex densa</i> Dense sedge <i>Carex tumulicola</i> Foothill sedge <i>Juncus patens</i> Gray rush <i>Aesclepias ssp.</i> Milkweed <i>Mimulus ssp.</i> Monkey flower <i>Carex globosa</i> Round fruited sedge <i>Ranunculus occidentalis</i> Western buttercup	
Shrubs and Vines <i>Festuca californica</i> California Fescue <i>Salvia sonomensis</i> Creeping sage <i>Lupinus nanus</i> Field lupine <i>Castilleja foliosa</i> Indian paintbrush <i>Mimulus aurantiacus</i> Monkey flower <i>Polystichum munitum</i> Sword fern <i>Fragaria chiloensis</i> Woodland strawberry <i>Achillea millefolium</i> Yarrow			

NOTE:

^a Ceanothus and Manzanita species would be native to the area (watershed) and propagated from on-site sources if feasible.

SOURCE: Maggie Young, Landscape Architect, 2011

As illustrated in Figure III-12, a single-track gravel walking trail is proposed to be developed on the knoll on the east side of Wappo Road.

Proposed Biological Measures

Tree Transplant and Replacement

As explained in greater detail in Section IV.D, Biological Resources, oak trees within the Project site that would be removed under the Project are proposed to either be transplanted or replaced with new oak trees as part of the landscaping plan and in accordance with recommendations provided by a certified arborist. This includes transplanting at least three coast live oak trees that

are in good condition to the location proposed for the parking area and planting new oak trees at a minimum of 3:1 replacement to impact ratio in the grasslands adjacent to the parking area.

Pre-Construction Biological Surveys

As explained in greater detail in Section IV.D, Biological Resources, the applicant’s biologist conducted protocol-level surveys on the Project site in 2011 for the California red-legged frog (CRLF), a federally threatened species and a California Species of Special Concern. While no CRLF were identified during the survey, nevertheless, the applicant proposes as part of the Project to use a USFWS-approved biologist to conduct CRLF preconstruction surveys within the limits of the proposed winery development site prior to the commencement of any construction activities. The preconstruction CRLF surveys would be conducted in manner that FYLF and WPT species would also be identifiable.

Construction

Construction of the winery would occur over approximately 19-months, with construction beginning in April 2013 and ending in October 2014. **Table III-2** presents the principal winery construction components, estimated duration of construction, and estimated number of construction workers.

**TABLE III-2
CONSTRUCTION SCHEDULE AND WORKERS**

Construction Component	Duration^a (months)	Estimated # Construction Workers
Establish subgrade on Wappo Road Prepare road surface for construction traffic Install water quality features	2	4-6
Rough-grade and excavate apron area Excavate soil nail wall at cave entrance Excavate for pad for water tanks for fire protection and potable water	2	4-6
Soil nail wall installation at cave entrance and fire Fire/potable water tank pad	2	8
Construct rain harvest tank pad (grading and retaining walls)	2	6
Winery support building stem wall grading and construction	2	6
Wine cave excavation, interior finish work and utility installation	10	6
Site utility trenching and pipe installation	2	8
Leachfield installation	1	3
Water tank installation (rain harvest, process wastewater, fire/potable water) Process wastewater plant installation	1	4
Winery production and support building construction	6	8-14
Final site grading and paving	2	6
Wappo Road surface improvements	2	5
Landscaping/irrigation system installation	2	4

NOTE:

^a Several of these individual construction component phases would overlap.

SOURCE: Atterbury and Associates, 2012

Several of the individual construction component phases would overlap. There would be an average of approximately 13 construction workers on-site throughout the construction period. During an anticipated 2-month peak period in the final stages of construction (i.e., winery building construction, final site grading and paving, Wappo Road improvements and landscaping/irrigation installation), there would be a maximum of approximately 27 workers on-site.

The total area of disturbance on-site affected by grading and construction would be less than 3 acres. Approximately 15,400 cubic yards (cy) of cut and 1,400 cy of fill would be required to terrace the Project site for the proposed buildings and tank pads, excavate the cave, and grade the roadway. All Project construction would be carried out using mechanical methods; no blasting is anticipated.

Construction of the proposed cave portal would involve sequential excavation of approximately 5-foot high benches on the slope using an excavator, working from the top-down, and installing soil nails and shotcrete⁶ on the slope face for stabilization. This process would be repeated for each bench until the full desired depth of the retained cut is achieved. The cave would be excavated using a milling-type cutting tool attached to an excavator or roadheader, and advancing the tunnel heading a few feet per day. Shotcrete support would be applied to the working slope daily. The cave would be excavated at an approximate grade of 1.5-2% sloping up from the portals to allow for gravity trench drains and the collection of any potential groundwater that may seep into the cave to drain out.

F. Permit Requirements

This EIR is intended to provide the information and environmental analysis necessary to assist public agency decision-makers in considering all of the approvals necessary for the planning, development, construction, operation, and maintenance of the proposed Project.

The County of Sonoma serves as Lead Agency for the proposed Project under CEQA. As Lead Agency, the County is responsible for reviewing and certifying the adequacy of this EIR. The County will use the EIR in its decisionmaking for considering whether to approve the proposed Project. Approvals that would be required from Sonoma County include a Use Permit for the winery operations, and grading and building permits for the winery construction.

Additional approvals may be required from the State Department of Fish and Game, State Department of Conservation, RWQCB, and the U.S. Fish and Wildlife Service.

⁶ Shotcrete is concrete conveyed through a hose and pneumatically projected at high velocity onto the working surface. Shotcrete undergoes placement and compaction at the same time due to the force with which it is projected from the nozzle.

References

(The references cited below are available at the Sonoma County Permit and Resource Management Department, 2550 Ventura Avenue, Santa Rosa, California, unless otherwise specified.)

Association of Bay Area Governments (ABAG), Focus Initiative Priority Conservation Areas, adopted 2008.

Sonoma County, *Sonoma County General Plan 2020*, adopted September 2008a.

Sonoma County, *Franz Valley Area Plan*, as modified 2008b.

Sonoma County, *Zoning Regulations – Chapter 26*, as amended 2012.

CHAPTER IV

Environmental Setting, Impacts and Mitigation

IV.A Summary of Initial Study

Introduction

On August 9, 2010, an Initial Study and Draft Mitigated Negative Declaration (MND) were prepared for an earlier version of the Project (see Appendix B in this EIR). As discussed in Chapter III under Project History, the version of the Project proposed at that time was similar to the Project as currently proposed. The principal difference was that the prior version of the Project included a proposed water conservation easement on the 100 Wappo Road property. On September 23, 2010, the Sonoma County Board of Zoning Adjustments (BZA) adopted the MND and approved the Project. Prior to the appeal hearing, the applicant and the County agreed to have an EIR prepared for the Project to facilitate full public disclosure. The applicant has since modified certain Project aspects of the Project.

This section summarizes relevant prior impact analysis, conclusions and mitigation measures from the 2010 Initial Study, and provides revised or new information, analysis and mitigation measures where appropriate to reflect the Project as currently proposed. In summary, on the basis of the 2010 Initial Study, augmented as appropriate with revised or new analysis and mitigation measures contained herein, it is determined that the following environmental topics have been sufficiently analyzed and mitigated in this section, and therefore, do not require further analysis in this EIR.

1. Transportation and Traffic
2. Air Quality
3. Greenhouse Gas Emissions
4. Noise
5. Aesthetics
6. Agriculture and Forestry Resources
7. Cultural Resources
8. Hazards and Hazardous Materials
9. Land Use and Planning
10. Mineral Resources
11. Population and Housing
12. Public Services
13. Recreation
14. Utilities and Services Systems

It is also determined that based on the scope of Project changes and new information available, the following environmental topics require further analysis in this EIR:

1. Geology, Soils, and Seismicity
2. Hydrology and Water Quality
3. Biological Resources

The information in the Initial Study and this chapter applies Appendix G of the CEQA Guidelines broadly to impacts of the environment on the Project, and thus goes beyond what CEQA requires.

Summary of Initial Study Environmental Topics

Transportation and Traffic

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project transportation and traffic impacts.

As was previously determined in the 2010 Initial Study, based on substantial evidence provided or cited in the Initial Study, the proposed Project would not result in any of the following: conflict with adopted transportation plans, ordinances or policies establishing measures of effectiveness of the circulation system; conflict with applicable congestion management program; or conflict with adopted policies, plans or programs regarding public transit, bicycle or pedestrian facilities or decrease the performance or safety of those facilities. The 2010 Initial Study also concluded that the Project would not affect air traffic patterns; increase hazards due to a design feature or incompatible uses; or result in inadequate parking capacity.

Nevertheless, in consideration of comments raised in response to the Notice of Preparation (NOP) for this EIR, the following discussion provides supplemental information, including current traffic conditions of St. Helena Road, Project vehicle trip generation during construction and operation, and potential Project construction and operational effects on roadway operations and traffic safety.

Transportation Network

St. Helena Road is a winding, mountainous two-lane rural roadway that provides access to the Project site, connecting to Santa Rosa and other points west, and to Napa Valley to the east. St. Helena Road has no shoulders. Travel lanes vary between 8 and 10 feet in width, with some narrower stretches. The posted speed limit on St. Helena Road is 40 miles per hour (mph), with several signed advisory 25 to 30 mph curves. Signage is also posted on St. Helena Road advising against use of the road by two-axle trucks over 30 feet in length, and three- to four-axle truck/trailers totaling over 40-feet in length. Wappo Road, which is partially asphalt-paved, and partially gravel-surfaced, is a private road and provides primary vehicular access to and within the Cornell Farms property.

The *Sonoma County General Plan 2020* classifies St. Helena Road as a “rural minor collector” between Santa Rosa and the Sonoma-Napa County line (Sonoma County, 2008). The General Plan, Sonoma County Transportation Authority (SCTA) *2009 Comprehensive Transportation Plan for Sonoma County*, and *2010 Sonoma County Bicycle and Pedestrian Plan* all identify a proposed Class III bikeway¹ on St. Helena Road between Santa Rosa and the Sonoma-Napa County line; the proposed bikeway is designated as a “low” priority funding project. In the

¹ Class III bikeways (signed routes wherein bicycles share the road width with vehicles) are intended to provide continuity to the County bicycle network. Bike routes are established along through routes not served by Class I (off-road bike paths) or Class II (on-road bike lanes separate from vehicle lanes), or to connect to discontinuous segments of Class I or II bikeways.

Project area, St. Helena Road is not served by public transit (Sonoma County, 2010, Sonoma County Transportation Authority, 2009).

Existing Traffic Volumes

In order to characterize existing traffic conditions on St. Helena Road, vehicle volume data were collected on St. Helena Road near Wappo Road from Tuesday, March 6 through Sunday, March 11, 2012, using 24-hour count machines. Weather conditions were clear on these days. Average midweek traffic volumes averaged approximately 540 vehicles per day (vpd), with a.m. peak-hour (8:15 a.m. to 9:15 a.m.) volumes of approximately 50 vehicles per hour (vph) and p.m. peak-hour (5:15 p.m. to 6:15 p.m.) volumes of approximately 60 vph. The Saturday traffic volume was lower than on weekdays, approximately 490 vpd, with a peak-hour volume of approximately 60 vph (in the afternoon). Sunday traffic volumes were lower still, with a traffic volume of 280 vpd, and an afternoon peak-hour volume of approximately 30 vph. These traffic volumes and patterns indicate that St. Helena Road primarily serves local traffic, and does not serve as a principal tourist route between Sonoma and Napa valleys.

Construction Project Vehicle Trip Generation

As described in Chapter III, Project Description, construction of the winery would occur over an approximately 19-month period. Construction activities that would generate off-site traffic would include the daily arrival and departure of construction workers, delivery of materials, and the off-site hauling of excess soil and construction debris. The following provides details on each of the Project vehicle trip generation elements.

Construction Worker Trips

As described in Chapter III, Project Description, it is estimated that there would be an average of approximately 13 construction workers on-site each day throughout the construction period, which would account for approximately 16 daily roundtrips. There would be a daily maximum of up to 27 construction workers on-site during the anticipated 2-month peak construction period, which would account for an estimated 34 daily roundtrips.²

Construction Truck Traffic

Exporting of excess soil created during cave excavation and site grading would be the largest generator of truck traffic during construction. In addition, there would be deliveries of materials to the Project site throughout the construction period, including shipments of concrete, lumber, and other building materials for on-site structures, utilities, road improvements, and landscaping. **Table IV.A-1** presents the estimated volume of construction materials and associated truck trips for each Project construction component.

² Construction worker vehicle round trips estimated based on 1 worker per vehicle, and 1.25 daily round trips per worker.

**TABLE IV.A-1
CONSTRUCTION TRAFFIC ESTIMATES**

Construction Component	Material Import			Material Export			Total Estimated Truck Round Trips for Material Transport ^a	
	Material Type	Quantity (cubic yards or as shown)	Duration (Work Days)	Material Type	Quantity (cubic yards or as shown)	Duration (Work Days)	Import	Export
Establish subgrade on Wappo Road Prepare road surface for construction traffic Install water quality features	Gravel Surfacing	225 CY	15	Excess road cut	3,089 CY	22	23	309
Rough-grade and excavate apron area Excavate soil nail wall at cave entrance Excavate for pad for water tanks for fire protection and potable water	--	--	--	Excess apron/ tank pad cut	3,833 CY	15	0	383
Soil nail wall installation at cave entrance and fire/potable water tank pad	Wall construction materials and concrete	1,041 CY	22	--	--	--	104	0
Construct rain harvest tank pad (grading and retaining walls)	Wall construction materials and pad materials	7 truck loads		Excess pad cut	138 CY	15	7	14
Winery support building stem wall grading and construction	Wall construction materials	2 truck loads		--	--	--	2	0
Wine cave excavation, interior finish work and utility installation	Utility delivery and cave finish concrete	20 truck loads		Cave spoils	7,640 CY	220	20	764
Site utility trenching and pipe installation	Utility delivery and controlled density fill import	3 truck loads		--	--	--	3	0
Leachfield installation	Tank and system component delivery	5 truck loads		--	--	--	5	0
Water tank installation (rain harvest, process wastewater, fire/potable water) Process wastewater plant installation	Tank and PW Plant component delivery	8 truck loads		--	--	--	8	0
Winery production and support building construction	Material delivery	25 truck loads		Construction waste	5 bins	entire Project	25	5
Final site grading and paving	Paving material delivery	5 truck loads		--	--	--	5	5
Wappo Road surface improvements	Gravel and asphalt concrete	547 CY	20	--	--	--	55	0
Landscaping/irrigation system installation	Plant and material delivery	20 truck loads		--	--	--	20	0

NOTE:

^a Average capacity of haul trucks would be 10 cubic yards.

SOURCE: Atterbury and Associates, 2012

As shown in Table IV.A-1, over the span of the construction period, and using an average truck capacity of 10 cubic yards, there would be a total of approximately 1,750 truck round trips (275 truck round trips associated with importing material, and 1,475 truck round trips associated with exporting material). The majority of the truck trips would occur during discrete phases within the construction period. The peak daily hauling would occur during the two initial construction phases (grading of Wappo Road, and grading and excavation of the apron and tank pad areas), when as many as 40 daily truck round trips could be expected over a period of approximately seven weeks. The proposed wine cave excavation phase would occur over a longer period of time, but the daily rate of excavation would be lower, resulting in an average of less than five truck round trips per day during this phase.

Project Operational Vehicle Trip Generation

The proposed winery would generate new, year-round vehicle trips associated with winery operations. During the harvest season, the Project would also generate new vehicle trips associated with transport of grapes to the winery, and eliminate existing vehicle trips associated with transport of grapes from Cornell Farms to other wineries. The following provides detail on each of the Project operational vehicle trip generation elements.

Wine Delivery. The applicant estimates that there would be an average of less than one round-trip per month associated with delivery of wine to other locations. This would consist of delivery of wine barrels and other supplies 4 to 6 times annually, and a bottling van once annually.

Winery Employees. The winery would have up to 3 employees year-round, and an additional 4 employees during harvest season. As a result, there would be an estimated 5 to 11 round trips per day associated with winery employees, depending on season.³

Wine Tasting and Special Event Visitors. As described in Chapter 3, Project Description, the winery would accommodate up to 15 visitors on weekdays for wine tasting. As visitors would be expected to arrive in small groups, and by appointment only, it is estimated that this would generate up to approximately 6 round trips per weekday.⁴

The winery would also hold up to 10 special events per year, with a maximum of ten guests per event. These special events could occur on weekdays or weekend days, but would not coincide with days when wine tasting would occur. It is estimated that these events would generate up to 4 visitor round trips.⁵ Associated special event trips could include one catering truck round trip and one server staff car round trip.

Other Miscellaneous Operational Trips. The winery would experience a minimal number of other operational trips, such as small package deliveries, which could account for 1 to 2 vehicle

³ Employee vehicle round trips estimated based on 1 employee per vehicle, and 1.5 daily round trips per employee.
⁴ Visitor vehicle round trips estimated based on average of 2.5 visitors per vehicle occupancy, and 1 daily round trip per vehicle.
⁵ *Ibid.*

round trips per week. Any other potential vehicle trips, such as occasional maintenance-related vehicles, would occur infrequently.

Trucks Shipments of Grapes During Harvest Season. Grapes are currently shipped from Cornell Farms to other wineries during harvest season, from mid-September through October of each year. As described in Chapter III, Project Description, at maximum production approximately 150 tons of grapes would be processed annually at the winery. Under these conditions, the existing vineyards on the Cornell Farms property would provide approximately 100 tons (two-thirds) of the grapes, with the balance (50 tons or one-third) transported to the winery from one or more off-site vineyards.

Because the proposed winery would use all of the grapes from the adjoining Cornell Farms vineyards, the Project would result in the elimination of existing off-site hauling of wine grapes. The applicant states that, currently, grapes are typically picked up by customers on a select basis or shipped off-site by the winery in small lots (average of ≤ 2 tons per truck load), amounting to a total of 50 or more round-trip truck trips during harvest season. Under the Project, these existing truck trips would not occur, as grapes would be hauled internally within the Cornell Farms property directly to the proposed winery.

As noted above, under maximum production conditions, up to 50 tons of grapes would be hauled to the winery from one or more off-site vineyards. The applicant states that grapes brought to the winery would occur in comparatively larger shipments (approximately 10 tons per truckload) than the current shipments of grapes to other wineries. At an average of 10 tons per truckload, a total of approximately 5 round-trip truck trips associated with transport of grapes from other vineyards to the proposed winery would occur during harvest season.

Project Construction Impacts

Project construction traffic would be temporary, intermittent, and dispersed throughout the day. The maximum Project construction truck trips (up to 80 one-way trips per day over a seven week period) translates to one truck approximately every six minutes traveling to or from the Project site over each 8-hour work day. Comparatively fewer daily truck trips would be generated during subsequent construction phases, resulting in lower truck frequencies during those phases. The movement of large Project-related construction trucks travelling to and from the Project site would be expected to result in increased congestion and lower rates of speed for other vehicles, particularly on St. Helena Road. Because the effect would be temporary and intermittent, it is considered less than significant, and no mitigation is required. However, since Project construction traffic would have some adverse (though less-than-significant) effect on traffic flow on roadways serving the site, the County shall require as a condition of approval that off-site transport of materials and equipment to and from the site should be limited to off-peak traffic periods. This condition shall be incorporated into contract specifications to ensure implementation by the construction contractor(s).

As described above, St. Helena Road is narrow and winding and the road has no shoulders, and consequently, the movement of large Project construction trucks travelling St. Helena Road could

result in the potential for conflicts with other traffic, and consequently, the potential for traffic safety effects. However, as previously stated, the construction period, and particularly the peak construction period, is limited in duration. Given the frequency of Project truck trips, even during the peak construction period, the Project effect on traffic safety would be less than significant.

Roadway pavement degrades over time due to heavy vehicles. The effect is incremental and cumulative over the approximately 20-year life span of pavement. Roadway degradation effects are generally considered for Projects that result in a long-term or permanent increase in heavy truck trips, and not for short-term construction truck traffic. Considering that the construction period for the Project would be limited, construction-related truck traffic would not result in a substantial adverse effect on roadway condition, and the impact is considered to be less than significant.

Project construction activities proposed along lower Wappo Road (e.g., roadway paving, shoulder and landscaping improvements) could result in temporary delays for traffic on Wappo Road and/or temporary closure of one lane of traffic on Wappo Road. Considering that the construction along lower Wappo Road would be limited in duration and would affect few residences, the impact to traffic flow and emergency access would be less than significant. Furthermore, any construction work within the public right-of-way where Wappo Road joins St. Helena Road would require an encroachment permit from Sonoma County. As part of that permit, the County would require appropriate traffic control measures to ensure that traffic flow and safety conditions on St. Helena Road would be maintained on this roadway during construction. This permit process would further minimize the Project's effect on traffic and emergency access due to temporary construction.

Project Operational Impacts

The estimated operational vehicle trip generation described above indicates that during the majority of the year (January through mid-September, and November through December), the winery would generate approximately 12 daily round-trips, primarily occurring on weekdays during daytime hours, and associated with employees and wine-tasting visitors. These trips would consist almost entirely of passenger vehicles.

During the harvest season (mid-September through October), additional employees would increase the total daily passenger vehicle trips to approximately 18 daily weekday round trips and approximately 6 weekend day round trips. There would also be a net decrease of over 40 truck round trips of wine grape shipments from Cornell Farms during the harvest season, compared to existing conditions.

Vehicle trips generated during evening hours would be limited to 10 evenings per year, when special events would result in approximately 6 round trips associated with visitors and event catering.

Given the existing traffic volumes on St. Helena Road, and the estimated Project operational trip generation estimates, Project operational trips would not be expected to contribute substantially to

daily traffic volumes or to have an adverse effect on existing levels of service or traffic safety on St. Helena Road. Furthermore, during harvest season, St. Helena Road would experience a net decrease in truck traffic generated at Cornell Farms compared to existing conditions, due to a net decrease in wine grape shipments. In addition, many of the Project vehicle trips would occur outside of peak commute hours. Consequently, the operational effects of the Project on traffic operating conditions and traffic safety on area roadways would be less than significant. The net decrease in truck traffic associated with grape shipments would also reduce the effect of ongoing Cornell Farms operations on roadway pavement conditions.

As described in Chapter III, Project Description, Wappo Road would be improved from St. Helena Road to the proposed winery parking area to provide all-weather access and comply with County Fire Safe Standards. These improvements would ensure that adequate emergency access would be provided, and potential Project effects to emergency access would be less than significant. As part of project approval, the site plans would also be subject to review by the County Department of Emergency Services to ensure adequate emergency vehicle access to the site.

Air Quality

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project air quality impacts.

As was discussed in the 2010 Initial Study, the proposed Project would not result in any of the following: 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 is in non-attainment under an applicable air quality standard; expose sensitive receptors to substantial pollutant concentrations; or create objectionable odors that would affect a substantial number of people.

The current Bay Area Quality Management District (BAAQMD) *CEQA Air Quality Guidelines* provide guidance for analyzing air emissions under CEQA, but do not recommend any specific significance thresholds for construction and operational emission impacts. Instead, the current BAAQMD *CEQA Air Quality Guidelines* suggest that lead agencies either reference BAAQMD's *Thresholds of Significance* adopted in 1999, or reference BAAQMD's *CEQA Thresholds Options and Justification Report* developed by BAAQMD staff in 2009, in selecting a significance threshold based on substantial evidence.⁶ Sonoma County agrees that the significance thresholds

⁶ The previous BAAQMD guidelines (adopted in June 2010 and amended in May 2011) did recommend specific significance thresholds. These guidelines were set aside pursuant to a judicial writ of mandate issued March 5, 2012, in *California Building Industry Association v. BAAQMD* (Alameda Superior Court Case No. RGI0548693). The judicial order requires BAAQMD to set aside its approval of the thresholds until it has conducted further environmental review under CEQA. The claims made in the case concerned the environmental impacts of adopting the thresholds – that is, how the thresholds would indirectly affect land use development patterns – not the scientific soundness of the BAAQMD's analysis of what levels of pollutants should be deemed significant, or the threshold to use in assessing any health risk impact a project will have on the existing environment.

contained in BAAQMD staff's 2009 *CEQA Thresholds Options and Justification Report* are supported by substantial evidence and will use the significance thresholds recommended there by the BAAQMD staff for determining the significance of Project air quality impacts in this EIR.

This EIR provides supplemental information, including information on Project air quality emissions, toxic air contaminants and odors generated during construction and/or operation, and evaluates the associated air quality impacts in consideration of the thresholds recommended in the BAAQMD Justification Report. The air quality analysis uses, as appropriate, Project information contained in Chapter III, Project Description, and Project vehicle trip generation information contained under Transportation and Traffic, above.

Project Construction Air Emissions

Project construction related air emissions were calculated using the California Emissions Estimator Model (CalEEMod). These emissions estimates were based on an estimate of Project construction-related activities that would result in air emissions, including the mix of construction equipment, number and type of truck trips, and schedule. Based on the CalEEMod estimates (provided in Appendix AQ), Project construction would result in average emissions of approximately 6 pounds per day of reactive organic gases (ROG), 50 pounds per day of oxides of nitrogen (NO_x), and 3 pounds per day of particulate matter (PM₁₀ and PM_{2.5}). These emissions are less than the BAAQMD thresholds of 54 pounds per day for ROG, NO_x and PM_{2.5} and 82 pounds per day for PM₁₀. As shown in Appendix AQ, estimated annual emissions would also be below the BAAQMD's annual significance thresholds for these pollutants. Therefore, construction emissions would be considered less than significant.

Project Operational Air Emissions

Project operational air emissions were also calculated using CalEEMod and account for mobile (motor vehicle) sources, area sources (landscape equipment and maintenance application of architectural coatings), and energy sources (combustion of natural gas for space and water heating). Based on CalEEMod estimates (provided in Appendix AQ), Project operations would result in daily emissions of approximately 0.4 pounds per day of ROG, 0.7 pounds per day of oxides of nitrogen (NO_x), 0.6 pounds per day of PM₁₀, and 0.04 pounds per day of PM_{2.5}. Operational emissions associated with Project fugitive sources, including fermentation and aging/storage of wine would generate an additional 7.0 of pounds of ROG per day. In addition, a propane-powered back-up generator would be installed and run for maintenance and emergency purposes only and would be permitted through the BAAQMD. Emissions from the generator were estimated using engine-specific emissions factors and conservatively assuming one hour of maintenance operations on a worst case day. The generator emissions would total 0.06 pounds per day of ROG and 0.16 pounds per day of NO_x while PM₁₀ emissions would be negligible (less than 0.01 pound per day).

Total maximum Project emissions would be approximately 7.5 pounds per day of ROG, 0.9 pounds per day of NO_x, 0.6 pounds per day of PM₁₀ and 0.04 pounds per day of PM_{2.5}. Project operational emissions would be substantially less than the BAAQMD thresholds of 54 pounds per day for ROG, NO_x and PM_{2.5} and 82 pounds per day for PM₁₀. Therefore, Project

operational criteria pollutant emissions would be considered less than significant. Project operational emissions would not overlap with construction emissions.

Exposure of Sensitive Receptors

Diesel particulate matter (DPM) has been identified by the State of California as a toxic air contaminant. BAAQMD uses a 1,000-foot radius as a screening distance for assessment of potential impacts from toxic air contaminants. The great majority of proposed construction activities that would involve use of diesel-powered construction equipment would occur over 1,000 feet from the nearest off-site sensitive receptor and over 400 feet from the nearest on-site receptor. BAAQMD screening tables for estimating health risk and hazards related to construction indicate that a separation of 330 feet is adequate for avoiding potential significant impacts related to receptor exposure to DPM and PM_{2.5} concentrations. While certain proposed roadway and drainage improvements along the lower portion of Wappo Road would involve temporary operation of construction equipment in the vicinity of nearby sensitive receptors (residences) on Wappo Road and St. Helena Road, given the scale and duration of construction activities at that location, there would be minimal exposure duration, and consequently, no substantial increase in human health risk levels for nearby residences.

There would be no new on-site sources of toxic air contaminants constructed or operated as part of the proposed Project. The back-up generator would be powered by propane and consequently, would not generate DPM. As discussed under Traffic and Transportation, above, during non-harvest season, a minimal number of truck trips would be generated (e.g., occasional delivery or maintenance vehicles). Furthermore, during harvest season, there would be a net decrease in operational truck trips compared to existing conditions as a result of grapes being processed on-site, rather than transported to an off-site winery, and hence a seasonal decrease in associated DPM emissions. The proposed winery would not be considered a sensitive receptor with regard to existing emissions of toxic air contaminants. Consequently, as determined in the 2010 Initial Study, the Project would not expose sensitive receptors to substantial pollutant concentrations.

Odor Emissions

The Project applicant proposes to compost the grape pomace generated during wine making operations and use the compost as a soil amendment in the Cornell Farms vineyards. BAAQMD has no record of odor complaints related to grape residue except when burned. The BAAQMD *CEQA Air Quality Guidelines* do not identify wineries as a land use commonly associated with odor emissions.

The winery process wastewater would be collected and pumped to a fully enclosed aerobic package treatment plant, which would minimize the potential for the development of anaerobic conditions (which can create odors). Domestic wastewater would be collected in a conventional concrete septic tank and then pumped to the 560 Wappo Road property, undergo pretreatment, and then would be disposed at the proposed new leach field on that property. The BAAQMD regulates odor emissions, including wastewater treatment plants, under its Regulation 7, and the BAAQMD has established a mechanism to respond to odor emissions should they become objectionable to the community at large. The nearest off-site receptor would be located over

1,000 feet away from any potential odor-generating Project sources within this rural area. Consequently, the proposed Project would not be expected to create objectionable odors affecting a substantial number of people.

Consistency with Clean Air Plan

As was previously determined in the 2010 Initial Study, the proposed development would not conflict with the Clean Air Plan of the BAAQMD. The Project site is within the San Francisco Bay Area Air Basin, which is currently designated as a nonattainment area for State and federal ozone standards and as a nonattainment area for the State particulate matter (PM₁₀ and PM_{2.5}) standards. The BAAQMD's *Bay Area 2010 Clean Air Plan* (CAP), adopted September, 2010, is the applicable Clean Air Plan for ozone, PM₁₀, and PM_{2.5} nonattainment issues (BAAQMD, 2010).

In accordance with BAAQMD recommended guidance, determination of consistency with the CAP is based on an evaluation of projected increases in population and vehicle miles travelled (VMT) attributable to the proposed Project, as well as consistency with the control measures identified in the CAP. When a Project is proposed in a county with a general plan that is consistent with the most recently adopted CAP, and if the Project is consistent with the land use designation of the general plan, then the Project is considered consistent with applicable air quality plans and policies.

The proposed Project would comply with the *Sonoma County General Plan 2020* designation and would be generally consistent with other goals and policies of the General Plan. The Project would also conform with the zoning for the Project site. In addition, the County's General Plan is consistent with the CAP because data and projections from the General Plan are incorporated into the CAP. The Project would generate less than 458 vehicle miles travelled (VMT) per day. The Project would also not induce growth and would not directly increase population in the region (see below). Therefore, the Project would not conflict with or require modification of population and VMT projections used to develop the *2010 Clean Air Plan* and the proposed Project would not substantially conflict with the region's air quality management plan.

Greenhouse Gases

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project greenhouse gases (GHGs).

As was analyzed and discussed in the 2010 Initial Study, the Project is not expected to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Furthermore, the 2010 Initial Study determined that with mitigation, the proposed Project would not conflict with applicable, plans, policies or regulations adopted for the purpose of reducing GHG emissions.

Below is a summary of the results of the GHG analysis from the 2010 Initial Study, augmented with new GHG analysis, where applicable. This EIR also provides supplemental new information, including updated information on the local planning efforts to reduce GHGs, a

clarification of the description of Project-proposed elements that would reduce GHG emissions and ensure GHG emissions would be less than significant.

Project Construction GHG Emissions

In support of the 2010 Initial Study, an analysis of Project construction-related GHG emissions was performed by Rimpo and Associates, Inc. (Rimpo and Associates, 2010). The Rimpo and Associates analysis focused on GHG emissions associated with operation of diesel powered construction equipment. Project construction-generated GHG emissions were estimated by Rimpo and Associates to be approximately 94 metric tons per year of carbon dioxide equivalents (eCO₂) during the first year of construction and 81 metric tons of eCO₂ in the second year of construction.

Although not estimated in the Rimpo and Associates analysis, the project would also generate GHG emissions associated with proposed land conversion. When vegetation and soil are removed, a portion of carbon stored in living and dead plant matter is released to the atmosphere. In addition, when living vegetation and soil are removed from the land, the land loses the ability to sequester additional carbon from the atmosphere. The total estimated Project soil carbon loss is conservatively estimated at 360 metric tons per year of eCO₂ (GHG calculations are provided in Appendix GHG).

Considered together, the total maximum construction GHG emissions would up to 454 metric tons per year of carbon dioxide equivalents (eCO₂). Consequently, Project construction-generated emissions of GHG would be less than the 1,100 metric ton per year significance threshold used by Sonoma County. Therefore, construction of the proposed Project would not generate GHG emissions, directly or indirectly, that would have a significant impact on the environment.

Project GHG Emissions

The Rimpo and Associates study also provided an analysis of Project operational GHG emissions. Project operational-generated GHG emissions would total 210 metric tons per year of eCO₂. Consequently, Project operational-generated emissions of GHG would be less than the 1,100 metric ton per year significance threshold, and operation of the proposed Project would not generate GHG emissions, directly or indirectly, that would have a significant impact on the environment.

Consistency with Plans for Reducing GHG Emissions

Consistent with the County Climate Protection Campaign, the *Sonoma County General Plan 2020* Open Space and Conservation Element Objective OSRC 14.4 sets a target to reduce GHG emissions to 25% below 1990 levels by the year 2015.

The *Sonoma County Community Climate Action Plan* was completed in October 2008, and addressed reducing GHG emissions through four categories: improving efficiency in energy and water use; shifting from fossil fuel-powered vehicle use to transit and alternative modes of transportation; investing in local renewable energy resources; and protection of forests and farmlands, increasing carbon sequestration and converting waste into energy.

The proposed Project would be generally consistent with the goals of the *Sonoma County Community Climate Action Plan*. Previously identified as a mitigation measure in the 2010 Initial Study, the winery now proposes as part of the project to install roof-mounted solar panels that would supply an estimated 30 percent of total Project electricity demand. In addition, the proposed use of rainwater for landscaping would reduce indirect GHG emissions associated with the need to pump groundwater and the pump's associated electricity use. The Project also proposes planting of a variety of new landscaping on-site that would increase oxygen production and carbon sequestration.

The County adopted the California Green Building Standards Code (CalGreen) with mandatory Tier 1 provisions on November 2, 2010. CalGreen Tier 1 requires a 15 percent increase above Title 24 energy efficiency requirements for non-residential construction. The Project would be required to comply with these requirements as applicable.

Given these factors, the Project would not be expected to conflict with applicable plans, policies or regulations adopted for the purpose of reducing the GHG emissions. Moreover, implementation of Mitigation Measure IV.D-2b in the EIR (planting of new oak trees on-site to mitigate the loss of trees that would be impacted by the Project, and permanent protection of oak woodland habitat at a 2:1 ratio on the Cornell Farms property) would further reduce Project greenhouse gas emissions and increase oxygen production and carbon sequestration.

Noise

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project noise impacts.

As was previously discussed in the 2010 Initial Study, the proposed Project does not have the potential for any of the following: result in exposure of persons to, or generation of noise in excess of established standards; result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels; result in a substantial permanent increase in ambient noise levels; result in a substantial temporary or periodic increase in ambient noise levels. Furthermore, the Project site is not located within an airport land use plan area or in the vicinity of an airport or private airstrip.

The following discussion provides additional information on Project noise characteristics during construction and operation and associated Project noise effects. The noise analysis uses, as appropriate, Project construction and operational information contained in Chapter III, Project Description, and Project vehicle trip generation information contained in the discussion of Transportation and Traffic impacts, above.

Construction Noise

There would be temporary increases in noise levels associated with Project construction activities. **Table IV.A-2** presents a list of proposed construction equipment and the noise levels associated with that equipment at various distances. Not all Project construction equipment would

**TABLE IV.A-2
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

Construction Equipment	Noise Level ^a (dBA, Leq at 50 Feet)	Noise Level ^a (dBA, Leq at 200 Feet)	Noise Level ^a (dBA, Leq at 1,000)
Scraper	84	72	58
Excavator	81	69	55
Loader	79	67	53
Concrete Pump Truck	81	69	55
Drill Rig	79	67	53
Concrete Mixer	79	67	53
Backhoe	78	66	52
Crane	81	69	55
Paver	77	65	51
Roller	80	68	54

NOTE:

^a Base data are average noise levels that correspond to a distance of 50 feet from as measured by the Federal Highway Administration.

SOURCE: Federal Highway Administration, 2006

be required during each construction phase, or active at a given time. The great majority of proposed construction, including for the winery buildings, tank facilities, and cave excavation, would occur over 1,000 feet from the nearest off-site receptor. At this distance, temporary noise increases from operation of the noisiest piece of equipment would be attenuated to 58 dBA, as indicated in Table IV.A-2. While the County does not establish noise standards for construction activities in either its County General Plan or the County Code, the General Plan does identify a daytime maximum noise exposure of up to 65 dBA for new projects and noise from construction equipment would be below this standard and considered a less than significant impact. Certain proposed roadway and drainage improvements along the lower portion of Wappo Road would involve temporary operation of construction equipment in the vicinity of nearby sensitive receptors (residences) on Wappo Road and St. Helena Road. However, construction in this area and associated noise effects would be of limited duration. All construction activities would occur during daylight hours.

During the construction phase with the peak off-site truck traffic, as many as 40 daily truck round trips would be expected over a period of approximately seven weeks. This peak construction phase would result in approximately ten one-way truck trips per hour. Using the Traffic Noise Model of the Federal Highway Administration, these peak daily truck trips would contribute 54 dBA to the hourly average noise levels at a distance of 50 feet from the roadway center. Addition of these truck trips to existing traffic on St. Helena Road would result in roadside noise levels of 56.7 dBA. This resultant noise level would be less than the 60 and 65 dBA noise contours for transportation sources used in the *Sonoma County General Plan 2020* for evaluating roadway noise and consequently would be considered a less than significant temporary or periodic noise increase. In other Project construction phases, noise levels increase from Project construction truck traffic would be even less, and similarly less than significant.

Construction Groundborne Vibration

As discussed in the 2010 Initial Study, construction of the proposed winery buildings and cave excavation would have the potential to generate groundborne vibration. However, no substantial vibration-inducing construction activities such as pile-driving or blasting are proposed for this Project. Given the distance of Project construction activities to nearby receptors, and assuming that standard construction equipment and techniques would be employed, Project construction would not expose persons to, or generate, excessive vibration or groundborne vibration noise.

Project Operational Noise

The Noise Element of the *Sonoma County General Plan 2020* discusses that noise produced at wineries can be of concern during the harvest season. During harvest season, wineries produce noise associated with truck deliveries, forklift use, and operation winery equipment such as air compressors, grape presses, exhaust fans, chillers and bottling plants. The General Plan indicates average hourly noise levels from properly muffled vehicles and equipment operating at wineries are typically less than 60 dBA at a distance of 300 feet from the source. On-site generated Project operational noise levels would be substantially attenuated by distance and the presence of intervening topography between the nearest receptor approximately 1,100 feet away. The General Plan acknowledges that, given the seasonal nature of wine making activities, noise impacts from normal winery operations are usually considered to be less than significant.

Distance and shielding from intervening topography would reduce noise levels at the nearest receptor to below 45 dBA, which would be consistent with both daytime and nighttime maximum allowable exterior noise exposure standards of the General Plan. Furthermore, as discussed under Transportation and Traffic, above, there would be a net decrease in Project truck activity during harvest season compared to existing conditions. Given these factors, and the seasonal nature of winery activities, Project operational noise impacts would be less than significant.

Aesthetics

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project aesthetic impacts.

As was previously determined in the 2010 Initial Study, the proposed Project would not result in any of the following: a substantial adverse effect on a scenic vista; substantial damage to scenic resources; or substantial degradation of the existing visual character or quality of the site and its surroundings. St. Helena Road is identified as a scenic corridor in the *Sonoma County General Plan 2020*. Given the setback of the proposed winery from St. Helena Road (over 1,300 feet) and interceding topography and vegetation, the proposed winery buildings, water tanks and associated facilities would not be visible from St. Helena Road. Similarly, the great majority of proposed vegetative removal and grading (other than the limited construction work that would occur on the southmost portion of Wappo Road) would not be visible from St. Helena Road. As discussed in Chapter III, the proposed landscaping plan proposes a variety of new trees, shrubs and groundcover to be planted throughout the winery site and along Wappo Road.

The 2010 Initial Study indicated the removal of the residence at 100 Wappo Road (proposed as part of the Project at that time) could enhance the visual character by removing a man-made feature of no aesthetic significance. While the Project as currently proposed would not remove the 100 Wappo Road residence, the effect of retaining the residence would merely be no change in the visual quality at this location compared to existing conditions. Nevertheless, the vegetative plantings proposed by the Project, including along lower Wappo Road, would serve to provide a visual enhancement to the Project site.

The 2010 Initial Study identified a potentially significant impact associated with Project nightlighting effects, as summarized below. Implementation of Mitigation Measure 1d from the 2010 Initial Study, with minor modifications, would ensure the effect of Project nightlighting would be less than significant.

Impact 1d: The proposed exterior lighting associated with the Project would have the potential to create a new source of nighttime light in the vicinity. This would be a less than significant impact with mitigation.

Mitigation Measure 1d: Prior to issuance of building permits, an exterior lighting plan shall be submitted for review and approval by PRMD Project Review staff. The exterior lighting plan shall demonstrate that the Project will not cause substantial nighttime light visible from other locations. Exterior lighting shall be low mounted, downward casting and fully shielded to prevent glare. Lighting shall not wash out structures or any portions of the site. Light fixtures shall not be located at the periphery of the property and shall not spill over onto adjacent properties or into the night sky. Flood lights are not permitted. All parking lot lighting fixtures shall be fully cut-off and shall not exceed four feet in height. Lighting shall shut off automatically after closing and security lighting shall be motion-sensor activated.

Significance after Mitigation: Less than Significant

Agriculture and Forestry Resources

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts to agriculture and forestry resources.

A review of the latest available *Sonoma County Important Farmlands Map 2008* (2010) shows that all proposed winery facilities, including winery buildings, tank sites and other improvements are located on land classified as "Other Land." Consequently, as was previously determined in the 2010 Initial Study, the proposed development would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland).

As discussed in the 2010 Initial Study, the proposed Project is consistent with existing underlying Resource and Rural Development zoning, is not located within a timber production district, and the Project site is not under a Williamson Act contract. Consequently, as determined in the 2010 Initial Study, the proposed Project would not: conflict with existing zoning for agricultural use, or Williamson Act contract; conflict with existing zoning for, or cause rezoning of

forestland, timberland, or timberland zoned Timberland Production; result in the loss of forest land to non-forest use; or involve other changes in the existing environment which could result in the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. As described in the 2010 Initial Study, the land on which the winery is proposed is characterized as oak woodland, not commercial timber forest. Regarding the potential for the Project to adversely impact oak woodlands, please refer to Section IV.D, Biological Resources.

Cultural Resources

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts to cultural resources.

A Cultural Resources Survey that was previously conducted on the Project site yielded no evidence of historical resources, archaeological resources, or human remains (Tom Origer & Associates, 2007). In addition, the 2010 Initial Study indicated that no paleontological resources were observed during preliminary geologic investigations at the Project site.

To account for changes to the Project site footprint that have occurred since preparation of the Cultural Resources Survey, ESA archaeologists conducted an updated records search (NWC File No. 12-0073) and supplemental surface reconnaissance to determine whether cultural resources are located within the Project site (ESA, 2012). No historical resources, archaeological resources, or human remains were identified during this supplemental field effort.

Nevertheless, as summarized below, the 2010 Initial Study identified that proposed excavation activities would have the potential to encounter undiscovered subsurface archaeological resources, paleontological resources, and human remains. Implementation of Mitigation Measures 5b-d from the 2010 Initial Study (Mitigation Measure 5b is modified slightly for clarity for this EIR) would ensure the effect would be less than significant.

Impact 5b: Land alteration proposed under the Project could affect previously undiscovered subsurface archaeological resources. This would be a less than significant impact with mitigation.

Mitigation Measure 5b: All building and/or grading permits shall have the following note printed on plan sheets:

“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 property, all work shall be halted in the vicinity of the find and County 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. Historic artifacts potentially include all by-products of human land use greater than 50 years of age including trash pits older than fifty years of age. 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. Mitigations may include avoidance, removal, preservation and/or recordation in accordance with California law. Archeological evaluation and mitigation shall be at the applicant’s sole expense.”

Significance after Mitigation: Less than Significant

Impact 5c: Land alteration proposed under the Project could affect previously undiscovered subsurface paleontological resources. This would be a less than significant impact with mitigation.

Mitigation Measure 5c: All building and/or grading permits shall have the following note printed on plan sheets:

“If paleontological artifacts are found during site development, all earthwork in the vicinity of the find shall cease, and PRMD staff shall be notified so that the find can be evaluated by a qualified paleontologist. When contacted, a member of PRMD Project Review staff and the paleontologist shall visit the site to determine the extent of the resources and to develop proper mitigation measures required for the discovery. No earthwork in the vicinity of the find shall commence until a mitigation plan is approved and completed subject to the review and approval of the paleontologist and Project Review staff. This condition shall be noted on all grading and construction plans and provided to all contractors and superintendents on the job site regarding the procedures to follow in the event that artifacts are found including contact information for PRMD.”

Significance after Mitigation: Less than Significant

Impact 5d: Land alteration proposed under the Project could affect previously undiscovered subsurface human remains. This would be a less than significant impact with mitigation.

Mitigation Measure 5d: All building and/or grading permits shall have the following note printed on plan sheets:

“If human remains are encountered, excavation or disturbance of the location shall be halted immediately in the vicinity of the find, and the County Coroner contacted. If the Coroner determines the remains are Native American, the Coroner will contact the Native American Heritage Commission (NAHC). The NAHC will identify the person or persons believed to be most likely descended from the deceased Native American. The NAHC will then work with the applicant on re-interring the remains. The applicant shall be responsible for all costs incurred in the removal, identification and reburial of the remains. This condition shall be noted on all grading and construction plans and provided to all contractors and superintendents on the job site

regarding the procedures to follow in the event that human remains are found including contact information for the County Coroner's Office.

Significance after Mitigation: Less than Significant

Hazards and Hazardous Materials

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts involving hazards and hazardous materials.

As was previously determined in the 2010 Initial Study, the proposed Project would not be expected to result in any of the following: create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; create a significant hazard to the public or the 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 material, substances or waste within one-quarter mile of an existing or proposed school; or be located on a list of hazardous materials sites pursuant to Government Code Section 65962.5. As discussed in the 2010 Initial Study, the proposed processing and fermentation of grapes would include the use and maintenance of machinery and equipment that would require the transport, use and/or disposal of hazardous materials (e.g., oil, diesel, solvents, lubricants, etc.). However, the use of any hazardous materials would not be of sufficient volatility or quantity to cause a hazard to the public. These materials are commonly used in the wine industry and would be handled pursuant to all applicable existing regulations and codes.

In terms of potential hazards to aviation, the Project would not be located within an airport land use plan or within the vicinity of a private airstrip. The proposed Project would also not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or expose people or structures to a significant risk of loss, injury or death involving wildland fires. As discussed in the 2010 Initial Study, the Project must conform to the County's Fire Safe Standard requirements for commercial uses related to fire sprinklers, emergency vehicle access, and emergency water supply. These standard provisions would ensure that potential Project fire hazard impacts would remain less than significant.

Land Use and Planning

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts to land use and planning.

As was previously determined in the 2010 Initial Study, the proposed Project would not physically divide an established community. The Project is located within an established rural area, and would not alter ownership the project parcels, or reconfigure existing parcels or roadways.

The 2010 Initial Study presented a number of relevant *Sonoma County General Plan 2020* policies. Additional relevant policies from the *Sonoma County General Plan 2020* and *Franz Valley Area Plan*, and applicable County ordinances, are presented in this EIR. As discussed in the 2010 Initial Study and in this EIR, with implementation of measures proposed as part of the project, and mitigation measures identified in this EIR, the proposed winery would be consistent with the *Sonoma County General Plan 2020* Resource and Rural Development (RRD) land use designation, and generally consistent with the goals and policies of the County General Plan. The proposed winery would also conform to the County's RRD zoning of the Project site. Article 10, Section Sec. 26-10-020(l) of the County zoning regulations permits with a use permit the processing of agricultural product of a type grown or produced on site or in the immediate area, storage of agricultural products grown or processed on site, and bottling of agricultural product grown or processed on site.

Impact 10b: The project could conflict with land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental impact. This would be a less than significant impact with mitigation.

Mitigation Measure 10b: Implement Mitigation Measure B.3 (geotechnical remedies to correct problematic soils) and Mitigation Measure B.4 (geotechnical erosion controls).

Significance after Mitigation: Less than Significant.

See also Section IV.D, Biological Resources for a discussion of potential Project conflicts with local plans and policies protecting biological resources.

As was previously determined in the 2010 Initial Study, the proposed Project would not conflict with any applicable habitat conservation plan or natural community conservation plan. As discussed in the 2010 Initial Study, the Project is not located within the County's Valley Oak Habitat Combining District.

Mineral Resources

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts to mineral resources.

As was previously determined in the 2010 Initial Study, the proposed Project would not result in the loss of a known mineral resource, and would not result in the loss of a locally-known mineral resource recovery site delineated in a local general plan, specific plan or other land use plan. Therefore, the Project would not be expected to result in a significant impact on mineral resources.

Population and Housing

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts on population and housing.

As was previously determined in the 2010 Initial Study, the proposed Project would not induce substantial population growth in the area, either directly or indirectly. As discussed in Chapter III, Project Description, the proposed winery would require three full-time employees, with up to four additional employees during harvest season. This level of employment would not be considered a substantial increase in population in the area, or generate a substantial increase in demand for housing. The 2010 Initial Study indicated that the removal of the residence at 100 Wappo Road (proposed as part of the Project at that time) would not result in a significant displacement of housing or people. The Project as currently proposed would not remove the 100 Wappo Road residence, and consequently, no impacts involving displacement of housing or people would occur under the Project. Therefore, the Project would not be expected to result in a significant impact to population and housing.

Public Services

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts to public services.

As was previously determined in the 2010 Initial Study, the proposed Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or create the need for new or physically altered governmental facilities which could cause significant environmental impacts. Therefore, the Project would not have a significant adverse effect with regard to public services.

Recreation

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts to recreation.

As was previously determined in the 2010 Initial Study, the proposed Project would not: 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 which have an adverse effect on the environment. Therefore, the Project would not have a significant adverse impact on recreation.

Utilities/Service Systems

There are no changes in the physical or regulatory environment, or revisions to the proposed Project, that would substantially alter any previous analysis or conclusions reached in the 2010 Initial Study with respect to Project impacts to utilities and service systems.

As was previously determined in the 2010 Initial Study, the proposed Project would not exceed wastewater treatment requirements of the Regional Water Quality Control Board (RWQCB);

would provide adequate wastewater treatment capacity to serve the Project's requirements; and would not require or result in the construction of new water or wastewater treatment facilities, or expansion of existing facilities, the construction of which could cause significant environmental impacts.

The proposed Project would not be served by public water or wastewater treatment facilities. As described in Chapter III, Project Description, winery process wastewater that would be generated would be treated at a proposed on-site aerobic package treatment plant in conformance with applicable North Coast RWQCB standards, and then conveyed to the Cornell Farms vineyards irrigation system to provide supplemental water for the vineyards. Domestic wastewater generated at the winery would be treated and disposed via a proposed on-site septic tank and leach field. The proposed wastewater disposal system must be reviewed and approved by the RWQCB, and through the County PRMD Well and Septic Section permitting process. Potential hydrologic, geologic, and biological impacts of development of the proposed wastewater treatment system and septic system are discussed under the corresponding sections in Chapter IV of this EIR.

The 2010 Initial Study determined that the Project would not require or result in the construction of new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental impacts. Potential hydrologic, geologic, and biological impacts of development of the construction of new storm water drainage facilities are discussed under the corresponding sections in Chapter IV of this EIR.

The 2010 Initial Study determined that the proposed Project would have sufficient water supplies available to serve the Project from existing entitlements and resources. As discussed in Chapter III, the winery proposes to use groundwater to supply water for the winery operations. Rainwater harvested at the winery would be used to irrigate the winery landscape vegetation, and to provide supplemental water for irrigation of the existing Cornell Farms vineyards to reduce the existing vineyard groundwater demand. The winery would also use treated winery process water to provide additional supplemental water for the existing Cornell Farms vineyards. As demonstrated in Section IV.C, Hydrology and Water Quality, with use of these water sources, the Project would result in a net reduction in the annual groundwater demand compared to existing conditions. Potential hydrologic and biologic impacts associated with the proposed use of these water sources are discussed under the corresponding sections in Chapter IV of this EIR.

The 2010 Initial Study determined that the proposed Project would be served by a landfill with permitted capacity to accommodate the Project's solid waste disposal needs; and would comply with federal, state and local statutes and regulations related to solid waste. The 2010 Initial Study indicated that Sonoma County has a solid waste management program that provides solid waste collection and disposal for the County. This program can accommodate the permitted collection and disposal of waste that would be generated by the Project. A covered trash enclosure is proposed at the rear (south side) of the winery building. In addition, stems and pomace generated at the proposed winery would be composted on-site and then reclaimed as a soil amendment in the vineyards.

References

(The references cited below are available at the Sonoma County Permit and Resource Management Department, 2550 Ventura Avenue, Santa Rosa, California, unless otherwise specified.)

Bay Area Air Quality Management District (BAAQMD), *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October 2009.

BAAQMD, *California Environmental Quality Act Air Quality Guidelines*, updated May 2012.

California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, *Sonoma County Important Farmlands Map 2008*, 2010.

Climate Protection Campaign, *Sonoma County Community Climate Action Plan*, October 2008.

ESA, *Cultural Resources Survey Report, Henry Cornell Winery Project, Sonoma County, California*. On file, NWIC, July, 2012.

Federal Highway Administration (FHWA), *Roadway Construction Noise Model Users Guide Final Report*, January 2006

Rimpo and Associates, Inc., *Greenhouse Gas Analysis of Cornell Winery Proposed for 245 Wappo Road, Sonoma County, California*, July 2010.

Sonoma County; *Sonoma County General Plan 2020*, September 2008.

Sonoma County, *2010 Sonoma County Bicycle and Pedestrian Plan*, August 2010.

Sonoma County Transportation Authority, *2009 Comprehensive Transportation Plan for Sonoma County*, October 2009.

Tom Origer & Associates, *A Cultural Resources Survey for the Cornell/Davis Winery Project, Sonoma County, California*, March 12, 2007.

IV.B Geology, Soils, and Seismicity

The Geology, Soils, and Seismicity section reviews the regional geologic and seismic setting and potential geologic and seismic hazards that may affect the proposed Project. This discussion focuses on increased exposure of people, structures, and the environment to hazards including ground shaking, slope failure, and accelerated erosion. The settings section is followed by the analysis of impacts and discussion of necessary mitigation measures. This section relies in part on the geotechnical analysis conducted by the applicant's geotechnical engineer RGH Consultants (RGH). Sonoma County Permit and Resource Management Department (PRMD) and its consultants reviewed the RGH geotechnical reports and updates for technical adequacy and consistency prior to referring to it for this analysis. The geologic analysis for the proposed Project also relied on published geologic references prepared by the California Geological Survey (CGS) and the U.S. Geological Survey (USGS). Published geologic maps referenced in this section include Huffman and Armstrong (1980), Dwyer (1976), and Graymer, et. al, (2007).

Environmental Setting

Regional Geology

The Project site is located within the geologically-complex and seismically-active region of California referred to as the Coast Range Geomorphic Province¹. Much of the Coast Range province is composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys, running subparallel to the San Andreas Fault Zone. Bedrock geology in this region is primarily associated with the Franciscan Complex, a mixture of ancient seafloor sediments and volcanic rocks, which, over millions of years, have undergone alteration by heat and pressure deep within the earth. Overlying the Franciscan bedrock are geologically younger, volcanic and sedimentary rock units including the Quien Sabe, Sonoma, and Clear Lake volcanic fields, and younger alluvial deposits.

Modern tectonic activity within the Coast Range continues to be associated with activity along the San Andreas system of faults. Regionally, this fault system is the boundary between large sections, or plates, of the earth's crust known as the North American Plate and Pacific Plate. In the San Francisco Bay Area, this boundary is a complex system of generally parallel, northwest trending faults extending from the main trace of the San Andreas along the coastline eastward to near Fairfield. This system includes several major active faults whose traces extend well into and, in some cases, beyond the North Bay Counties. These faults and their characteristics are summarized below in the Seismicity section.

¹ California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landforms with unique, defining features based on geology, faults, topographic relief, and climate.

Regional and Project Site Topography

The Project area is located in the southern portion of the Mayacamas Mountains, a northwest-trending mountain range that parallels the Sonoma-Napa county line with elevations of several peaks exceeding 2,500 feet above sea level (asl). Diamond Peak, located about 1.5 miles north of the Project site, is about 2,200 feet asl. **Figure III-1** in Chapter III, Project Description, shows the topography in the Project site vicinity. The Cornell Farms property is topographically varied, with elevations ranging from a low of approximately 1,360 feet asl to a high of approximately 1,780 feet asl.

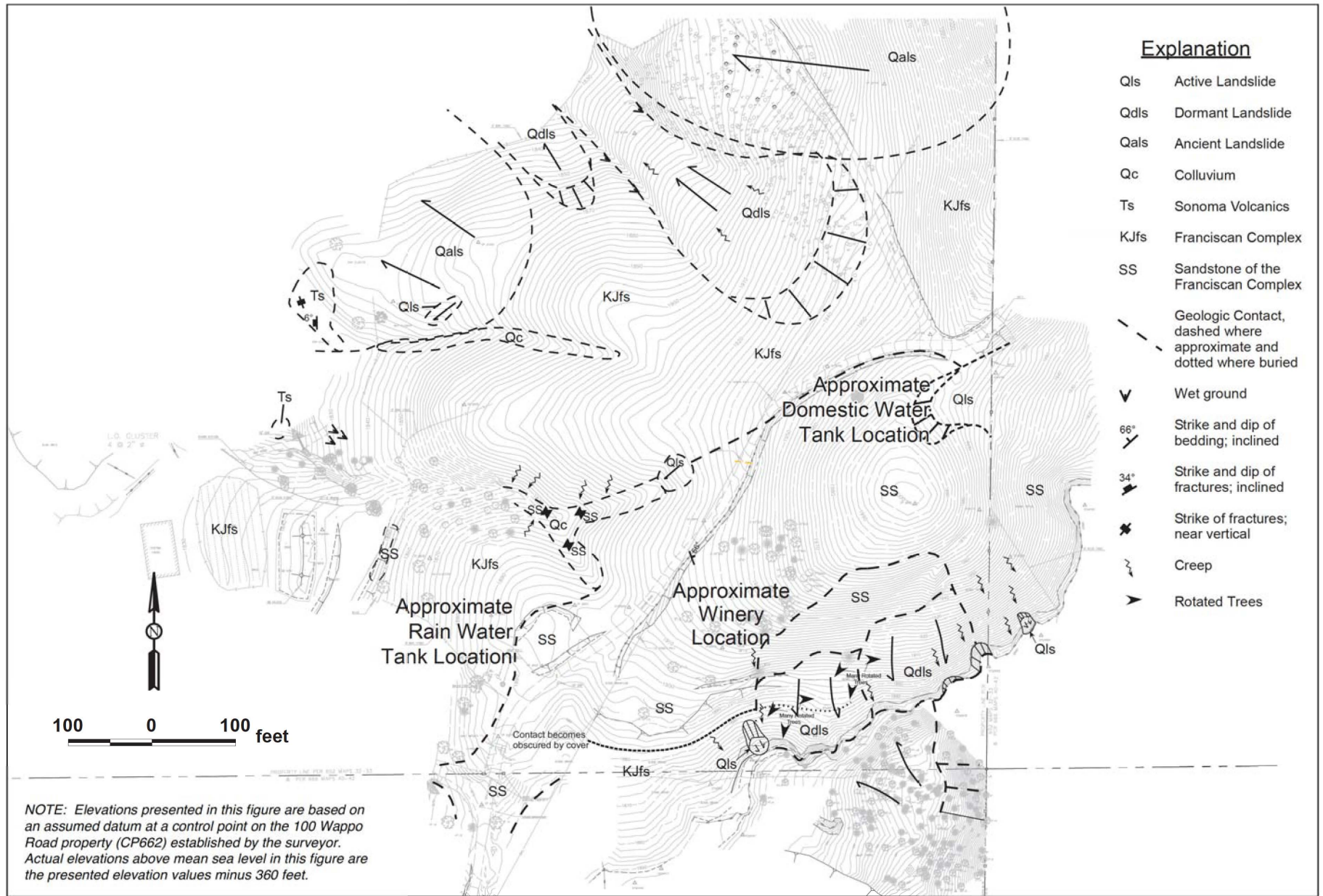
The topography of the Cornell Farms property where the majority of proposed winery development is proposed (i.e., at 245 Wappo Road / APN 028-260-041 – see Figure III-1) is controlled by west-facing spur ridges and intervening ravines off a southerly trending ridge and knoll top that borders the eastern parcel boundary. In general, slopes on this parcel range from steep (1.3H to 1V, 35 degrees, or 73 percent)² to gradual (13H to 1V, 4.4 degrees, or 7.7 percent) while slopes on the proposed winery site are moderate and generally range between 3.5H:1V (16 degrees or 29 percent) and 5H:1V (11.3 degrees or 20 percent). The USGS 7½ Minute series topographic map of the Calistoga Quadrangle (1997) indicates the topography ranges from over 1,680 feet above mean sea level along the eastern boundary of the parcel to approximately 1,360 feet within a deep ravine on the west.³ The proposed winery buildings and wine cave system would be located on the south and west side of a ridge running along the east side of Wappo Road at approximately 1,560 feet asl (see **Figure III-5** in Chapter III, Project Description). The proposed rain water harvest storage tanks and parking area would be located just west of the winery buildings across Wappo Road. The proposed winery process water and fire suppression water tanks and the process water treatment facilities would be located at the top of the ridge just northeast and above the winery at approximately 1,640 feet asl (see Figure III-5). The proposed winery domestic leach field (at 560 Wappo Road / APN 028-260-025– see Figure III-1) is at approximately 1,660 feet asl (RGH, 2010).

Site Geology

Figure IV.B-1 presents a geologic map for the area of the primary proposed winery facilities (i.e., winery buildings, tanks and process water treatment facilities), based on field mapping, trench pits, and borings conducted by RGH. Geologic materials present in this area include bedrock, landslide debris, and colluvium.

² Slopes can be expressed as a ratio of horizontal (H) distance to vertical (V) distance, percents and degrees. For example, a 2(H) to 1 (V) slope extends horizontally 2 feet for every vertical foot it rises. A 2(H) to 1(V) slope can also be expressed as a slope at 26.6 degrees off the horizontal or a “50 percent” slope.

³ It should be noted that the topographic contour values shown on the USGS survey-based map (i.e., Figure III-1 in this EIR) do not agree with the topographic contour values shown on the applicant’s surveyor-based topographic maps (i.e., Figure IV.B-1 in this section; Figures III-5, -III-9, -III-10, and -III-12 in the Project Description, and those figures in Appendix PD in this EIR). This discrepancy stems from the use of a different vertical datum by the applicant’s surveyor in their original survey of the site. Accordingly, all figures presented in this EIR that are based on the applicant’s topographic survey note this discrepancy, and all topographic elevations referenced in this text discussion are based on the true elevation asl.



The Project area is underlain by Franciscan Complex *mélange*⁴ and sandstones. Although larger scale regional geologic maps show younger Tertiary age (65 to 1.8 million years ago) Sonoma Volcanics (pumacitic ash flow tuff) in the Project area, onsite mapping, trenching, and borings confirmed that only small outcrops of Sonoma Volcanics are located in the Project vicinity (approximately 300 feet northwest of the proposed rainwater harvest tank pad). Test pits and borings completed by RGH further confirm the winery site is underlain by sandstone and *mélange* units of the Franciscan Complex. These units then overlie and are in fault contact with the Sonoma Volcanics. The fault surface appears to be the southeastern extension of an unnamed thrust fault that extends northwesterly through the northern portion of the 245 Wappo Road parcel and may be either the Gates Canyon Thrust Fault or an extension of the Petrified Forest Thrust Fault⁵ (McLaughlin et al, 2004). This fault is also shown as an unnamed thrust fault on the geologic maps by Graymer et al (2007) and Huffman and Armstrong (1980) as extending northwesterly through the northern portion of the parcel. Faults and seismicity are discussed further below.

RGH identified deposits from active, dormant, and ancient landslides during its geotechnical investigation and geologic reconnaissance at the Project site. These deposits are shown on Figure IV.B-1 and are labeled “Qls” for active landslide materials, “Qdls” for material within a dormant landslide, and “Qals” for more stable, ancient landslide deposits. Further discussion on slope instability is provided below in the discussion of geologic hazards.

Colluvium deposits are composed of soil that has been developed from the in-place weathering and degradation of rock materials. RGH mapped a 250-foot band of colluvium on the slope west of Wappo Road (approximately 300 feet north of the proposed winery buildings). However, no colluvium deposits were mapped within the footprint of the proposed winery facilities.

Soils

The Natural Resources Conservation Service (NRCS) has classified soil within the footprint of the proposed winery facilities as the Goulding series with areas of Boomer loam, Henneke gravelly loam, and Toomes rocky loam. The onsite geologic mapping discussed above noted that the Boomer soil series appears to resemble soils developed on Franciscan rocks in the area. The Boomer series consists of well-drained clay loams that have a clay loam subsoil underlain by greenstone and metamorphosed rocks found on mountainous uplands with slopes of 30 to 50 percent. The topsoil is a loam with that extends to a depth of about 19 inches. The soil underlying the topsoil (subsoil) is a gravelly clay loam with a moderate shrink-swell potential that extends from a depth of about 19 to 55 inches. Runoff over these soils is reportedly rapid with a high risk of erosion.

⁴ *Mélange* is a heterogeneous mix of sheared sandstone and shale with some masses of chert, and high-grade metamorphic rocks (greenstone and serpentinite)

⁵ A thrust fault is a generally gently dipping or subhorizontal fault plane where the relative movement has been essentially horizontal, with one rock sequence being pushed across and above another

Faults and Seismicity

This section characterizes the region's existing faults, describes historic earthquakes, estimates the likelihood of future earthquakes, and describes probable ground shaking effects. The primary sources of information for this section were publications prepared by USGS, CGS, and hazard mapping tools provided by the Association of Bay Area Governments (ABAG).

Earthquake Terminology and Concepts

Earthquake Mechanisms and Fault Activity

Faults are planar features within the earth's crust that have formed to release strain caused by the dynamic movements of the earth's major tectonic plates. An earthquake on a fault is produced when these strains overcome the inherent strength of the earth's crust, and the rock ruptures. The rupture causes seismic waves to propagate through the earth's crust, producing the ground shaking effect known as an earthquake. The rupture also causes variable amounts of slip along the fault, which may or may not be visible at the earth's surface.

Geologists commonly use the age of offset rocks as evidence of fault activity—the younger the displaced rocks, the more recently earthquakes have occurred. To evaluate the likelihood that a fault will produce an earthquake, geologists examine the magnitude and frequency of recorded earthquakes and evidence of past displacement along a fault. An *active* fault is defined by the State of California as a fault that has had surface displacement within Holocene time (last 11,000 years). For the purpose of delineating fault rupture zones, the CGS historically sought to zone faults defined as *potentially active*, which are faults that have shown evidence of surface displacement during the Quaternary (last 1.6 million years). However, usage of that term under the Alquist-Priolo Earthquake Fault Zoning Act was discontinued because it became apparent that there are so many Quaternary-age faults in the state that it would be meaningless to zone all of them (Bryant and Hart, 2007). In late 1975, the State Geologist made a policy decision to zone only those faults that have a relatively high potential for ground rupture. It was decided that a fault should only be considered for zoning if it is “sufficiently active”⁶ and “well-defined.”⁷ *Blind* faults do not show surface evidence of past earthquakes, even if they occurred in the recent past; and faults that are confined to pre-Quaternary rocks (more than 1.6 million years old) are considered inactive and incapable of generating an earthquake.

Earthquake Magnitude

When an earthquake occurs along a fault, its size can be determined by measuring the energy released during the event. A network of seismographs records the amplitude and frequency of the

⁶ A fault is deemed sufficiently active if there is evidence of Holocene surface displacement along one or more of its segments or branches. Holocene surface displacement may be directly observable or inferred; it need not be present everywhere along a fault to qualify that fault for zoning.

⁷ A fault is considered well-defined if its trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The fault may be identified by direct observation or by indirect methods (e.g., geomorphic and geophysical evidence). The critical consideration is that the fault, or some part of it, can be located in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

seismic waves that an earthquake generates. The Richter Magnitude (M) of an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole number step representing a ten-fold increase in the amplitude of the recorded seismic waves and 32 times the amount of energy released. While Richter Magnitude was historically the primary measure of earthquake magnitude, seismologists now use Moment Magnitude as the preferred way to express the size of an earthquake. The Moment Magnitude scale (M_w) is related to the physical characteristics of a fault, including the rigidity of the rock, the size of fault rupture, and the style of movement or displacement across the fault. Although the formulae of the scales are different, they both contain a similar continuum of magnitude values, except that M_w can reliably measure larger earthquakes and do so from greater distances.

Peak Ground Acceleration

A common measure of ground motion at any particular site during an earthquake is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. In terms of automobile accelerations, one “g” of acceleration is equivalent to the motion of a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum PGA value recorded during the Loma Prieta earthquake in the vicinity of the epicenter, near Santa Cruz, was 0.64g. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place, and is dependent on the distance from the epicenter and the character of the underlying geology (e.g., hard bedrock, soft sediments, or artificial fills).

The Modified Mercalli Intensity Scale

The Modified Mercalli Intensity Scale (**Table IV.B-1**) assigns an intensity value based on the observed effects of ground shaking produced by an earthquake. Unlike measures of earthquake magnitude and PGA, the Modified Mercalli (MM) intensity scale is qualitative in nature, which means that it is based on actual observed effects rather than measured values. Similar to PGA, MM intensity values for an earthquake at any one place can vary depending on its magnitude, the distance from its epicenter, the focus of its energy, and the type of geologic material. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. Because the MM is a measure of ground shaking effects, intensity values can be related to a range of average PGA values, also shown in Table IV.B-1.

Faults and Historic Earthquake Activity

The seismic environment in Northern California and the San Francisco Bay Area is characterized by the several active faults in the San Andreas Fault System, which formed due to major forces occurring at the boundary of shifting tectonic plates. This fault system, and its northwest-trending folds and faults, control much of the geologic structure within the northern Coast Ranges.

**TABLE IV.B-1
MODIFIED MERCALLI INTENSITY SCALE**

Intensity Value	Intensity Description	Average Peak Ground Acceleration^a
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.0017-0.014 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.0017-0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.014–0.039g
V (Light)	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.035 – 0.092 g
VI (Moderate)	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	0.092 – 0.18 g
VII (Strong)	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.18 – 0.34 g
VIII (Very Strong)	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.34 – 0.65 g
IX (Violent)	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65 – 1.24 g
X (Very Violent)	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (sloped) over banks.	> 1.24 g
XI (Very Violent)	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII (Very Violent)	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

NOTE:

^a Value is expressed as a fraction of the acceleration due to gravity (g). Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2003a; and CGS, 2003

The San Francisco Bay Area region contains both active (Holocene) and potentially active (Quaternary) faults and is considered a region of high seismic activity. Throughout the Project area, there is a potential of damage from movement along any one of a number of the active Bay Area faults. The USGS, the CGS, and the Southern California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities to summarize the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the state of California over the next 30 years. Accounting for the wide range of possible earthquake sources, it is estimated that the Bay Area as a whole has a 63 percent chance of experiencing an earthquake of magnitude 6.7 or higher before 2036. Among the various active faults in the region, the Hayward-Rodgers Creek and San Andreas fault systems are the two most likely to cause such an event (USGS, 2008).⁸

Figure IV.B-2 depicts historic (within recorded history), Holocene (active within last 11,000 years), Quaternary (11,000 to 1.6 million years), and pre-Quaternary (older than 1.6 million years) faults in the vicinity of the Project site, including the Rodgers Creek, Alexander-Redwood Hill, Maacama, West Napa, Green Valley-Concord, and the San Andreas faults. **Table IV.B-2** lists the active faults and identifies the dates of their most recent significant activity and the estimated maximum moment magnitude of a characteristic future event. The distance listed to the various faults represents the shortest distance to the Project area. The Rodgers Creek, Alexander-Redwood Hill, and Maacama faults are the closest faults to the Project site.

**TABLE IV.B-2
 ACTIVE AND POTENTIALLY ACTIVE REGIONAL FAULTS IN THE VICINITY OF THE PROJECT SITE**

Fault Zone	Distance and Direction from Project Site	Recency and Classification of Faulting^a	Historical Seismicity^b	Maximum Moment Magnitude^d
Rodgers Creek	7 Miles southwest	Historic – Active	M 6.7: 1898 M 5.6, 5.7: 1969	7.0
Alexander-Redwood Hill	7-½ Miles west	Holocene - Active	NA	7.0
Maacama	8 miles northwest	Holocene – Active	Active creep ^c	7.1
West Napa	24 Miles East	Holocene –Active	NA	6.5
Cordelia Fault Zone (northern extension of Green Valley-Concord Fault Zone)	24 miles southeast	Holocene – Active	Active creep ^c	6.9
San Andreas (active main trace)	30 miles west	Historic – Active	M 7.1: 1989 M 8.25: 1906 M 7.0: 1838 Many <M 6	7.3

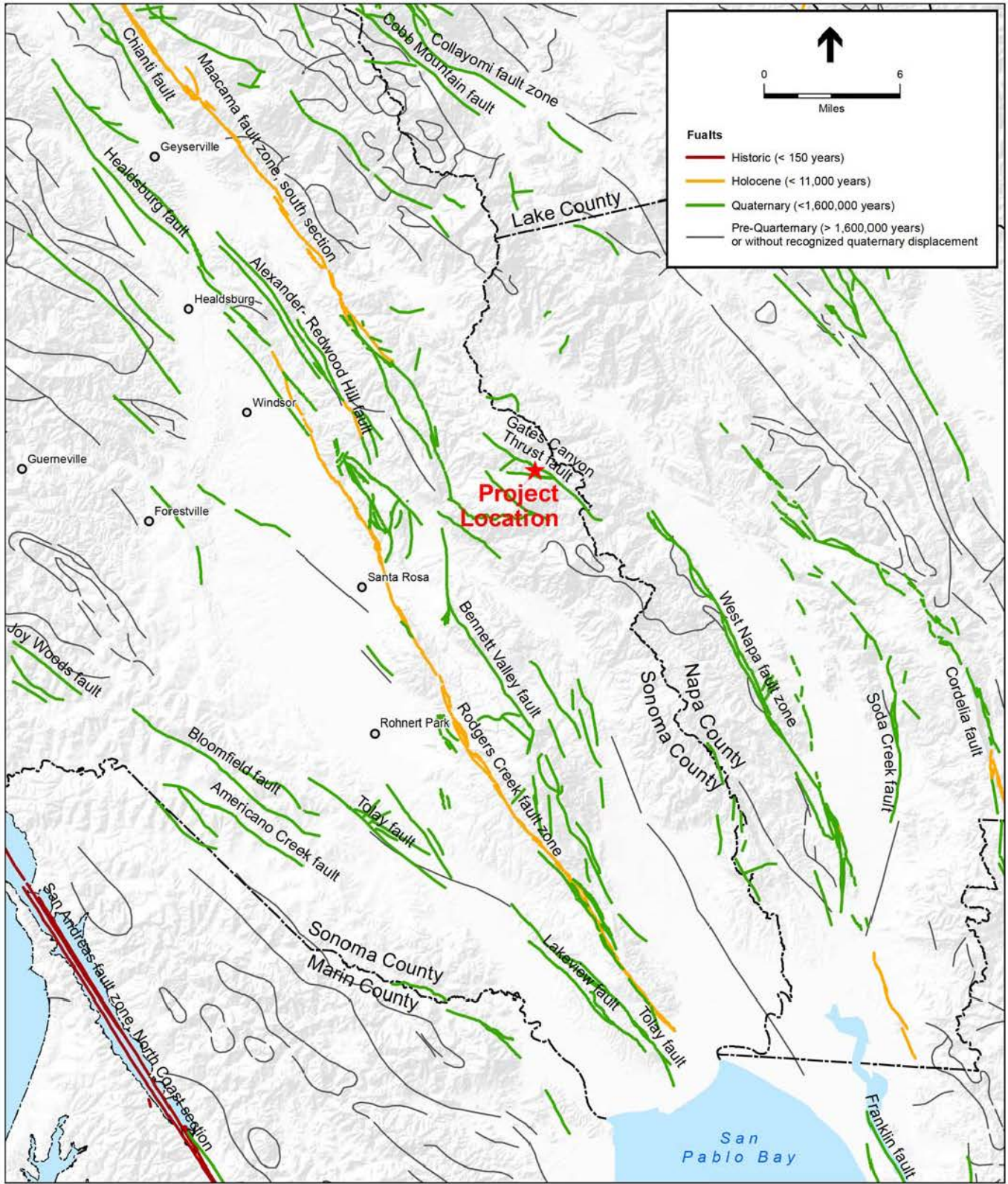
NOTES:

- ^a Recency of faulting from Jennings (2010). Historic: displacement during historic time (within last 200 years), including areas of known fault creep; Holocene: evidence of displacement during the last 11,000 years; Quaternary: evidence of displacement during the last 1.6 million years; Pre-Quaternary: no recognized displacement during the last 1.6 million years (but not necessarily inactive).
- ^b Richter magnitude (M) and year for recent and/or large events.
- ^c Slow fault movement that occurs over time without producing an earthquake.
- ^d Maximum moment magnitude from CGS (1996). This is the maximum earthquake moment magnitude which could occur within the specified fault zone.

NA = Not applicable and/or not available

SOURCES: Jennings, 2010, Bryant and Hart, 2007, CGS, 1996, and Sowers et al, 2010.

⁸ The Rodgers Creek fault is considered to be a northern extension of the Hayward fault which has not been mapped beneath San Pablo Bay.



SOURCE: USGS and California Geological Survey, 2010 Henry Cornell Winery . 211996
Figure IV.B-2
 Regional Fault Map

The Rodgers Creek fault zone is the southern segment of a fracture zone that includes the Rodgers Creek fault (north of San Pablo Bay and within southern Sonoma County) and the Healdsburg fault (northern Sonoma County). The Green Valley-Concord fault, which includes the Cordelia fault zone southeast of the Project site, extends from Walnut Creek north to Wooden Valley (east of Napa Valley). Historical records indicate that no large earthquakes have occurred on the Concord or Green Valley Faults (USGS, 2003). However, a moderate earthquake of magnitude M5.4 occurred on the Concord fault segment in 1955. The Concord and Green Valley Faults exhibit active fault creep and are considered to have a small probability of causing a significant earthquake.

The Maacama fault has been undergoing creep of about 8 millimeters per year over the past 700 years in the Willits area but with no large earthquakes (Larsen et al, 2005). Large earthquakes have not been recorded in historic time on the Maacama and West Napa faults, but both have experienced lower level seismic activity within Holocene time (Sowers et al, 2010).

Large historic earthquakes (magnitude 6 and greater) on regional active faults have been responsible for generating significant ground shaking throughout the region, including events on the Rodgers Creek fault (1898, 1969), and the San Andreas (1906, 1989) fault. The Rodgers Creek fault is considered the northern extension of the Hayward fault and is capable of causing significant ground shaking from Vallejo to north of Healdsburg. The most recent significant earthquake on the Rodgers Creek fault occurred in October 1, 1969. On this date, two earthquakes of magnitude 5.6 and 5.7 occurred in an 83-minute period and caused serious damage to buildings in Santa Rosa. The last major earthquake (estimated Richter magnitude 6.7) was generated in 1898 with an epicenter near Mare Island at the north margin of San Pablo Bay. The USGS estimates the probability of a large earthquake (magnitude 6.7 or greater) on the Rodgers Creek fault (when considered together with the Hayward fault) during the period between 2002 and 2032 to be 31 percent (USGS, 2008). The expected ground shaking generated by a seismic event on the Rodgers Creek Fault is anticipated to cause significant damage and interruption of service for transportation (e.g., highways, railroads, and marine facilities) and lifeline (e.g., water supply, communications, and petroleum pipelines) facilities throughout Sonoma and Napa Counties.

Gates Canyon Thrust or Petrified Forest Thrust Zone

Figure IV.B-2 shows the subsurface location of a Quaternary age (less than 1.6 million years ago) thrust fault identified from the CGS fault data website (CGS, 2010). The location of this fault is consistent with an unnamed fault identified by Huffman and Armstrong (1980) that extends northwesterly through the northern portion of the subject parcel. This unnamed fault could be the eastern extension of either the Gates Canyon Thrust Fault, or an extension of the Petrified Forest Thrust Fault, both these faults are mapped in the Mark West quadrangle located west of the Project area. Recent geologic mapping of the adjacent Mark West Springs 7½ minute quadrangle by Robert McLaughlin of the USGS indicates the formerly unnamed thrust fault is the Petrified Forest Thrust (PFT) zone. The PFT fault dip ranges from approximately 50 degrees northeasterly to near vertical at the surface, and that the age of faulting could be younger than about 2.8 million years, but no evidence of Holocene (less than 11,000 years) rupture was observed (RGH, 2010;

McLaughlin, et al, 2004). The site-specific geologic mapping did not observe any surface expression of this thrust fault. However, borings in the area of the proposed winery buildings encountered a fault surface at depths ranging from 65 to 111 feet below the ground surface (bgs) separating overlying Franciscan Complex rocks from underlying overlying Sonoma Volcanics that may be the thrust fault surface. Another east-west trending fault that branches off the thrust fault is mapped by Huffman and Armstrong (1980) approximately 1,000 feet to the southeast of the proposed winery (RGH, 2010). The branch fault shows a dip angle of 60 degrees to the north. Additionally, Huffman and Armstrong (1980) mapped two short, northeasterly-trending faults approximately 800 feet southeast and about 5,000 feet northwest of the 245 Wappo Road parcel. All of these faults are said to show evidence of faulting during the Pleistocene age (700,000 to 2 million years ago) (Bortugno, 1982 *cited in* RGH, 2010).

Project Site Geologic Hazards

Based on the geologic data reviewed during the preparation of this EIR, the potential geologic hazards currently existing at the Project site include localized slope instability and problematic soils. These geologic hazards are discussed below.

Slope Instability and Failure

Slope failures (commonly referred to as landslides) include many phenomena that involve the downslope displacement and movement of material either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Slope failures categorized as slides displace masses of material along one or more discrete planes. In rotational sliding the slide plane is curved and the mass rotates backwards around an axis parallel to the slope; in translational sliding the failure surface is more or less planar and the mass moves parallel to the ground surface. Slope stability can depend on a number of complex variables, including the geology, structure, and amount of groundwater, as well as external processes such as climate, topography, slope geometry, and human activity. The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope.

The geotechnical study completed by RGH for the proposed Project reviewed published geologic maps and conducted a site reconnaissance to determine the potential for slope instability and landslides. Review of published maps determined that the tongue of a large landslide encompassed a portion of the site (Huffman and Armstrong, 1980) but another map (Dwyer, 1976), does not show the presence of landslides at the site of the primary proposed winery facilities. Nevertheless, the review of the available published maps does indicate that this area is prone to slope instability and landsliding. Portions of the Project area are within a relative slope stability Category “C,” which means an area categorized by relatively unstable rock and soil units, and slopes of greater than 15 percent, containing abundant landslides (Huffman and Armstrong, 1980).

In its field reconnaissance, RGH documented active, dormant and ancient landslide deposits in the vicinity of the primary proposed winery facilities. Active landslides range in age from recent

to about 50 years and exhibit areas of unstable ground with fresh geomorphic features. Common fresh features can include hummocky (irregular) topography, abrupt grade breaks, ground cracks, exposed soils and disrupted vegetation (RGH, 2010). The location of, and geologic materials associated with, these landslide features are shown on Figure IV.B-1.

As shown in Figure IV.B-1, there are five small active landslides mapped and the deposits associated with these failures are localized within the area of the failure. Specifically, one of the identified active landslides is located approximately 50 feet southeast of the edge of the proposed winery building pad; one is located adjacent to and east of, and another 180 feet southeast of, the proposed pad for the domestic water tanks / wastewater treatment facilities; one is located approximately 120 feet north of the proposed winery buildings (west of Wappo Road); and one is located approximately 300 feet north of the proposed rainwater harvest tank pad (west of Wappo Road).

Dormant landslides in the Project site vicinity appear to be “quasi-stable” with a mature and subdued surface expression. Fresh features generally become vague or indistinct, and vegetation generally re-establishes itself but is typically different in type and/or density than the original vegetation. The age of dormant landslides is estimated to range from about 50 to several hundred years (RGH, 2010). RGH mapped deposits from three dormant landslides within the property boundary. The first dormant landslide area is located at the base of an approximately 270-foot by 100-foot rocky scarp face just southeast of the proposed winery buildings and cave along the southeast facing side of the ridge. This scarp face is the base slide surface of a former landslide, the material of which is now further down the slope and in the intermittent creek area. Vegetation has re-occupied the scarp face area, with trees up to two-feet in diameter. The other two dormant landslides are in the northwest facing slope west of Wappo Road. The scarp of the longest landslide is approximately 120 feet northwest of the proposed pad for the domestic water tanks / wastewater treatment facilities.

Ancient landslides differ from dormant landslides in that the landslide features are highly eroded and subdued, and vegetation is more heavily re-established and with a similar vegetation type as the surrounding terrain (RGH, 2010). RGH mapped ancient landslide deposits on the west-facing slope west of Wappo Road, approximately 300 feet north of the proposed rainwater harvest tank pad.

Slope stability and landsliding are potential geologic hazards at the Project site, and therefore are discussed further in the Impact and Mitigations Measures section of this section.

Problematic Soils

Based on NRCS soil surveys and information obtained from the site-specific geotechnical study performed by RGH, soil at the Project site may be problematic due to its expansive nature and tendency to creep downhill. A general discussion of potentially unsuitable soil conditions including corrosive, expansive, and erodible soils is provided below. Problematic soil conditions are potential geologic hazards at the Project site and therefore, are discussed further in the Impact and Mitigations Measures section of this section.

Weak, Expansive, and Creep-Prone Soils

Weak surface soils, such as those found at the Project site, appear hard and strong when dry but will lose strength rapidly and settle under the load of fills, foundations, slabs, and pavements as their moisture content increases and approaches saturation. The moisture content of these soils can increase as the result of rainfall, periodic irrigation or when the natural upward migration of water vapor through the soils is impeded by, and condenses under fills, foundations, slabs, and pavements. Previous geotechnical investigation identified weak, creep-prone surface soils at the site. These soil materials tend to naturally consolidate and settle on sloping terrain. Fills and foundations deriving support from these materials would then be susceptible and contribute to the downslope creep and settlement unless properly embedded in bedrock or buttressed (keyed, benched, drained and compacted). The settlement of these soils can cause cracks in concrete slabs and other structural distress such as cracked plaster and sticky doors and windows (RGH, 2010).

Expansive soils and bedrock may be encountered in the surface soil exposed at the site. These materials contain significant amounts of clay particles that have the ability to give up water (shrink) or take on water (swell). When these soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as buildings or underground utilities, and can result in structural distress and/or damage. If dried out, the soil will contract, often leaving fissures or cracks. Excessive drying and wetting of the soil can progressively deteriorate structures over the years by leading to differential settlement beneath or within buildings and other improvements. The zone of significant moisture variation (active layer) is dependent on the expansion potential of the soil and the extent of the dry season. In the Sonoma County area, the active layer is generally considered to range in thickness from about 2 to 3 feet (RGH, 2010).

Accelerated Erosion

Erosion is the wearing away of soil and rock by processes, such as mechanical or chemical weathering, mass wasting, and the action of waves, wind and underground water. Excessive soil erosion can eventually lead to damage of building foundations and roadways. Areas that are susceptible to erosion are those that would be exposed during the construction phase, especially on steeper slopes. The natural runoff potential of soils underlying the Project site is generally high. Much of the Project site does occur on or adjacent to slopes that would be susceptible to erosion. Typically, the soil erosion potential is reduced or eliminated once the soil is graded and covered with concrete, structures, asphalt, vegetation, or other slope protection measures. Soil and excessive erosion are potential geologic hazards at the Project site, and therefore are discussed further in the Impact and Mitigations Measures part of this section.

Project Site Seismic Hazards

Seismic hazards are generally classified in two categories: primary seismic hazards (surface fault rupture and ground shaking) and secondary seismic hazards (liquefaction and other types of seismically induced ground failure, along with seismically induced landslides).

Surface Fault Rupture

Seismically-induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Although future earthquakes could occur anywhere along the length of an active fault, only regional strike-slip earthquakes of magnitude 6.0 or greater are likely to be associated with surface fault rupture and offset (CGS, 1996). It is also important to note that earthquake activity and fault rupture due to unmapped subsurface fault traces is a possibility that is not predictable.

Ground rupture is considered more likely along active faults, which are referenced in Figure IV.B-2 and Table IV.B-2. The highest potential for surface faulting is along existing fault traces that have had Holocene fault displacement. The closest active faults to the Project site are the southern portion of the Maacama Fault, the northern portion of the Rodgers Creek Fault, and the small Alexander-Redwood Hill Fault, all approximately 8 miles from the Project site. The risk of fault rupture at the Project site is considered low because the near-vicinity thrust faults and other minor associated faults are not zoned under the Alquist-Priolo (A-P) Earthquake Fault Zone (See Regulatory Framework, below) and available published information regarding the age and activity of the faults suggest that recent displacement has not occurred. This is further substantiated by the lack of physical evidence and surface features on the Project site suggesting the presence of active faults. The potential for fault rupture to occur on the Project site is low and therefore is not discussed further in this section.

Seismic Ground Shaking

As discussed above, a major earthquake is likely to affect the overall Project vicinity within the next 30 years, and would produce strong ground-shaking effects throughout the region. Earthquakes on active or potentially active faults, depending on magnitude and distance from the Project site, could produce a range of ground-shaking intensities at the Project site. Historically, earthquakes have caused strong ground-shaking and damage in the San Francisco Bay Area, with the most recent being the M 6.9 Loma Prieta earthquake in October 1989. A 7.0 moment magnitude earthquake on the Rodgers Creek fault or a 6.6 moment magnitude earthquake on the Maacama Fault would be estimated to cause strong (MMI intensity VII) shaking intensities at the Project site (ABAG, 2003b).

The primary tool that seismologists use to describe ground shaking hazard is a probabilistic seismic hazard assessment (PSHA). The PSHA for the State of California takes into consideration the range of possible earthquake sources (including such worse-case scenarios as described above) and estimates their characteristic magnitudes to generate a probability map for ground shaking. The PSHA maps depict values of peak ground acceleration (PGA) that have a 10 percent probability of being exceeded in 50 years (i.e., a 1 in 475 chance of occurring each year). Use of this probability level allows engineers to design structures to withstand ground motions that have a 90 percent chance of *not* occurring in the next 50 years, making buildings safer than if they were merely designed for the most probable events. The PSHA indicates that at the Project site, there is a 10 percent chance of exceeding PGA values of 0.364 g in firm rock, 0.373 g in soft

rock, and 0.408 g in alluvium over the next 50 years (CGS, 2003). As indicated in Table IV.B-2, these PGA values correspond to a very strong MMI intensity (VIII). This level of shaking has been associated in previous earthquakes with slight damage in specially designed structures; considerable damage in ordinary substantial buildings, with partial collapse; and great damage in older and poorly built structures (e.g., unreinforced masonry) (ABAG, 2003a). Seismic ground shaking is a potential seismic hazard at the Project site, and therefore is discussed further in the Impact and Mitigations Measures section of this section.

Liquefaction

Liquefaction is a rapid loss of shear strength experienced in saturated, predominantly granular soils below the groundwater level during strong earthquake ground shaking due to an increase in pore water pressure. The occurrence of this phenomenon is dependent on many complex factors including the intensity and duration of ground shaking, particle size distribution and density of the soil. Most soils at the Project site are neither granular nor saturated or located below the groundwater surface. The soils at the site are generally stiff to very stiff sandy clays with some gravel. RGH (2010) concluded that the potential for liquefaction at the Project site is low, and therefore, liquefaction and the secondary effects of liquefaction are not discussed further in this section.

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, noncompacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill. Earthquake-induced settlement could occur in the event of an earthquake and is a potential seismic hazard discussed further in the Impact and Mitigations Measures section of this section.

Seismic Slope Instability/Ground Cracking

Earthquake motions can also induce substantial stresses in slopes, causing earthquake-induced landslides or ground cracking when the slope fails. Earthquake-induced landslides can occur in areas with steep slopes that are susceptible to strong ground motion during an earthquake. The 1989 Loma Prieta earthquake, which occurred on the San Andreas Fault, triggered thousands of landslides over an area of 5,400 square miles. Earthquake-induced landslides and slope instability is a potential seismic hazard discussed in the Impact and Mitigations Measures section of this section.

Regulatory Framework

Federal

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction activities. The Occupational Safety and Health Administration's (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations (CFR), Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this Act, the state geologist established regulatory zones, called earthquake fault zones, around the surface traces of active faults and has published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace because many active faults are complex and consist of more than one branch that may experience ground surface rupture. This Act does not apply to the proposed Project because no active faults cross the Project area.

California Building Code

The CBC has been codified in the CCR as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 to be enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2010 edition of the CBC is based on the 2009 International Building Code (IBC) published by the International Code Conference. The 2010 CBC contains California amendments based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (such as wind loads) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

NPDES Construction General Storm Water Permit

The RWQCB administers the National Pollution Discharge Elimination System (NPDES) storm water permitting program in the North Coast region. Construction activities disturbing one acre or more of land are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (Construction General Permit) and must apply for Construction General Permit coverage. Permit Registration Documents (PRDs) must be electronically filed for all new projects using the Stormwater Multiple Applications and Report tracking Systems (SMARTS), and must include a Notice of Intent, risk assessment, site map, and Storm Water Pollution Prevention Plan (SWPPP) to be covered by the General Construction Permit prior to the beginning of construction. The risk assessment and SWPPP must be prepared by a state qualified SWPPP Developer (QSD).

The Construction General Permit requires that the site be assigned a risk level of 1 (low), 2 (medium), or 3 (high), based on sediment and receiving waters risk. The Sediment Risk is the relative amount of sediment that can be discharged, given the project and location details. The Receiving Waters Risk is the risk sediment discharges pose to the receiving waters. A construction analysis provides a preliminary risk level assessment.

The Construction General Permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must be prepared before construction begins. The SWPPP would include specific construction-related Best Management Practices (BMPs) to prevent soil erosion and loss of topsoil. BMPs implemented could include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of swales, protection of stockpiled materials, and a variety of other measures that would substantially reduce or prevent erosion from occurring during construction.

Local

Sonoma County General Plan

The following policies from the Public Safety Element of the *Sonoma County General Plan 2020* are relevant to the proposed Project.

PS-1a: Continue to utilize all available data on geologic hazards and related risks from the appropriate agencies.

PS-1b: Continue to utilize studies of geologic hazards prepared during the development review process.

PS-1f: Require and review geologic reports prior to decisions on any project which would subject property or persons to significant risks from the geologic hazards. Geologic reports shall describe the hazards and include mitigation measures to reduce risks to acceptable levels. Where appropriate, require an engineer's or geologist's certification that risks have been mitigated to an acceptable level and, if indicated, obtain indemnification or insurance from the engineer, geologist, or developer to minimize County exposure to liability.

PS-1g: Prohibit structures intended for human occupancy (or defined as a "project" in the Alquist-Priolo Special Studies Zones Act and related Administrative Code provisions) within 50 feet of the surface trace of any fault.

PS-1h: Adopt, upon approval by the International Code Council (ICC) and the State of California, revisions to the Uniform Building Code which increase resistance of structures to groundshaking and other geologic hazards.

Sonoma County Code of Ordinances

The Sonoma County Code of Ordinances includes regulations and requirements covering grading and drainage in Chapter 11 - Grading, Drainage, and Vineyard and Orchard Site Development. Grading permits are covered in Article 04, permit implementation is covered in Article 14, and standards are provided in Article 16.

Impacts and Mitigation Measures

The following section focuses on potential Project impacts related to geologic and seismic hazards. The evaluation considered Project plans, current conditions at the project site, and applicable regulations and guidelines.

Significance Criteria

The significance criteria for this geologic and seismic impact analysis are adapted from the CEQA *Guidelines*, Appendix G. Based on the guidelines, geologic, seismic or soils-related impacts resulting from the proposed Project would be considered significant if the proposed Project would:

1. Expose people or structures to geologic or seismic hazards that could not be overcome by modern geotechnical engineering design and standard construction and maintenance practices. These hazards could cause substantial risk of loss, injury, or death involving:
 - a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist (California Geological Survey Special Publications 42 and 117 and PRC §2690 et. seq.);
 - b. Strong seismic ground shaking;

- c. Seismic-related ground failures, including liquefaction, lateral spreading, subsidence, collapse; or landslides.
2. Result in substantial soil erosion (accelerated erosion) or loss of topsoil;
3. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (UBC) creating substantial risks to life or property;
4. Be located on 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse; or
5. 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;

Under CEQA, the required analysis extends only to whether the Project would cause impacts on the existing environment, not to whether the environment might affect either the Project or future occupants of the Project. Thus, geological and seismicity impacts to future occupants of the Project that might arise from the environment rather than from the Project are not within the scope of a CEQA analysis. However, to inform the County about issues of regulatory concern, and for ease of reference, the County has directed that this document apply the criteria above broadly enough to evaluate any such issues, if present.

Certain issues identified in the significance criteria are not considered impacts to the proposed Project and are discussed briefly below.

Fault Rupture Hazards

The risk of fault rupture at the Project site is considered low because the near-vicinity thrust faults and other minor associated faults are not zoned under the Alquist-Priolo (A-P) Earthquake Fault Zone (See Regulatory Framework) and available published information regarding the age and activity of the faults suggest that recent displacement has not occurred. This is further substantiated by the lack of physical evidence and surface features on the Project site suggesting the presence of active faults. Due to the low potential for fault rupture to occur on the Project site, surface fault rupture is not considered an impact to the Project.

Liquefaction and Related Secondary Failures

Most soils at the Project site are neither granular nor saturated or located below the groundwater surface. The soils at the Project site are generally stiff to very stiff sandy clays with some gravel. RGH (2010) concluded that the potential for liquefaction at the Project site is low, and therefore, liquefaction and the secondary effects of liquefaction are not considered an impact to the Project.

Impacts and Mitigation Measures

Impact B.1: In the event of a major earthquake in the region, people or structures could be exposed to the potential adverse effects of seismic ground shaking. This would be a less than significant impact.

The Project site is located in a seismically-active region and could experience at least one large earthquake sometime within its operational life. The intensity of ground shaking at the site could vary depending on the causative earthquake fault, the distance from the fault to the site, and the geologic materials. As discussed above, the Project site could experience peak ground accelerations (PGAs) ranging from 0.364 g in firm rock (sandstone) to 0.408 g in alluvium (colluviums or landslide debris), which are equivalent to very strong (VIII) Modified Mercalli Intensities (see Table IV B-1).

A large earthquake in the region would be felt at the site and the ground shaking could have the potential to cause some structural damage to the winery buildings, wine cave and/or other supporting facilities, and result upset of unsecured equipment and/or materials. The most likely consequence of such occurrence would be an inconvenience in winery operations and potential temporary closure to workers and/or visitors while any required repairs are completed.

Design and construction of the proposed winery buildings and ancillary structures would be required to adhere to stringent seismic design criteria set forth in CCR Title 24, the California Building Code (CBC). The purpose of the CBC is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. While buildings constructed under the CBC seismic design criteria may experience some structural damage during a major seismic event, the potential for structural collapse very low. The applicant's geotechnical consultant determined that the Project site is a Site Class C (very dense soil/soft rock), as per the CBC and recommended appropriate seismic design criteria for that class rating (RGH, 2010). Furthermore, because the foundations of the proposed winery buildings and tanks would be placed on massive bedrock, seismic waves would attenuate and reduce excessive the ground motions that could cause substantial damage.

In the event of an earthquake, the interior of the wine caves may encounter some damage such as cracked and broken concrete but the potential for the wine caves interiors to collapse or cave-in during an earthquake in is low. The proposed caves are excavated and completed in bedrock that would attenuate seismic waves and would have interiors that are lined with steel reinforced concrete that would further reduce ground shaking effects. Hydrostatic pressure (pressure of groundwater between the rock and the inside walls) that could build up during an earthquake would be reduced by the drainage system installed in the walls.

The current understanding of earthquake ground motion and modern geotechnical engineering design enables construction of structurally sound buildings and supporting facilities in earthquake-prone regions of California. Earthquakes can and will occur in the region and the proposed Project may be affected, but with the application of current seismic design criteria

required under the CBC and location of the site on bedrock, impacts associated with ground shaking during a major seismic event would not result in a substantial risk to public safety, and therefore, the impact is less than significant.

Mitigation: None Required.

Impact B.2: The proposed Project would be constructed on sloping terrain and could be subject to slope instability and potential landsliding. This would be a less than significant impact.

As described in the Setting, the site of the primary proposed winery facilities (i.e., winery buildings, rain water collection tanks, potable water tanks, and process water treatment facilities) would be situated in hilly terrain with slopes ranging from steep (35 percent) to gradual (~8 percent). These are slopes associated with the southerly trending sandstone ridge that runs along the east side of Wappo Road. Slopes at the site of the proposed winery buildings and cave are moderate (20 to 29 percent).

The Setting provides details regarding the active, dormant and ancient landslide deposits in the vicinity of the primary proposed winery facilities, as documented by RGH. To summarize, active landslides range in age from recent to about 50 years and exhibit areas of unstable ground with fresh geomorphic features. There are five small active landslides mapped in the vicinity and the deposits associated with these failures are localized within the area of the failure. Dormant landslides are about 50 to several hundred years old and appear to be “quasi-stable” with a mature and subdued surface expression. Ancient landslides are highly eroded and subdued, and vegetation is more heavily re-established and with a similar vegetation type as the surrounding terrain. RGH mapped ancient landslide deposits on the west-facing slope west of Wappo Road, approximately 300 feet north of the proposed rainwater harvest tank pad. The landslide deposits identified in the project vicinity by RGH are not located within the immediate areas proposed for development under the Project.

Considering the hillside slopes and evidence of onsite landslide debris of varying age (mentioned above and described in detail in the Setting), there is a potential that slope instability and landsliding could affect the proposed Project facilities. This finding is consistent with the conclusions of the geotechnical analysis completed by RGH (RGH, 2010). Slope instability and landsliding at the site could damage the proposed winery buildings, undermine roadway support, or cause excessive erosion and down gradient sedimentation.

Acknowledging the potential for slope instability, RGH completed an analysis of the long term static (failure due to forces affected by gravity) and dynamic (earthquake forces) slope stability.⁹ RGH’s slope stability analysis utilized the computer program Slope/W (GEO-SLOPE

⁹ “Static” refers to the stability of a slope as controlled by gravitational forces while “dynamic” refers to the stability of a slope when subjected to earthquake ground motion.

International, Ltd., 2007) using geologic cross sections and incorporating conservative inputs for groundwater conditions. The cross sections represented a critical slope condition for the winery production building extending down the adjacent steepest slope and including the small landslide located at the toe of the slope and the sandstone/mélange geologic contact. Sonoma County PRMD and its geotechnical consultants reviewed the RGH slope stability analysis and supporting geotechnical information and concurred with its methodology and findings.

Long term static slope conditions were evaluated for a Factor of Safety of 1.5, which is the accepted standard of practice for these conditions.¹⁰ The analysis of long term static stability considered strength parameters for both the near surface bedrock materials and the underlying Franciscan Complex mélange bedrock materials. Strength parameters of the underlying bedrock were obtained by RGH from in place (in-situ) testing of rock samples from each geologic unit. In-situ strength values were then verified against published values and values previously obtained elsewhere on the Project site.¹¹ Factoring in groundwater and the in-situ strength parameters for the sandstone and the mélange, the RGH slope stability analysis yielded Factors of Safety greater than or equal to 1.5 for the slope cross sections analyzed and therefore concluded that the slopes on the main sandstone ridge supporting the winery site and domestic water tank and treatment facility would be stable under static conditions (RGH, 2010).

Similar to the analysis of static stability, dynamic (seismic) slope stability analysis considers the slope configuration, geologic materials, and groundwater conditions but also factors in the effects of the horizontal accelerations acting on the slope during an earthquake. RGH performed a seismic stability analysis for the representative cross sections and critical slopes extending across the winery site using procedures recommended by the Southern California Earthquake Center (SCEC).¹² The procedure considers the magnitude of the controlling earthquake, the anticipated PGA at the Project site, and the F_{eq} (factor related to the seismicity of the site) to determine the ground-motion parameter, referred to as the seismic coefficient. For the Project site, this coefficient was determined to be 0.215g. The resulting seismic stability analyses yielded Factors of Safety equal to or greater than 1.0 for both representative cross sections and therefore, RGH concluded that the slopes on the main sandstone ridges winery site and Project site would be considered stable under seismic conditions.

The proposed rain water harvesting tanks (located under 150 feet west of the winery buildings) are located on a bedrock spur ridge adjacent to the main sandstone ridge that underlies the proposed winery site. Core drilling at the proposed rainwater tank area determined that the subsurface Franciscan bedrock geology is similar to that underlying the proposed winery site (RGH, 2011). Furthermore, slopes at the rainwater tank site are flatter than those analyzed for the

¹⁰ A “Factor of Safety” considers the forces resisting slope failure versus the forces causing a slope to fail. If the forces resisting failure (gradual slope, competent material, deep groundwater) are greater than those causing failure (over-steepened slope angle, unconsolidated material, high groundwater) the Factor of Safety would be 1 or greater, indicating a stable slope. A slope with a Factor of Safety less than one is unstable and prone to failure.

¹¹ RGH also used geologic data collected from 1) an earlier geotechnical investigation at the project site (RGH, 2008), and 2) data obtained from the geologic assessment of the proposed wine caves (Condor, 2011).

¹² The SCEC procedures were prepared in association with California Geological Survey Special Publication 117 (CGS, 2008), which is a guideline for analyzing and mitigating landslide hazards in California.

slope stability analysis of the winery site (RGH, 2012). Based on the slope stability analysis performed for the critical slopes underlying the winery site that yielded Factors of Safety equal to or greater than 1.0, the findings from the core drilling logs that confirmed the similarities of bedrock materials, and the flatter slopes of rainwater storage tank site, RGH concluded that the slopes supporting the proposed rainwater tanks would remain stable under static conditions and in the event of a regional earthquake. RGH also concluded that there is no evidence of landslides in the immediate vicinity of the rain water tank site. This finding was based on review of published maps and aerial photographs, in addition to a site reconnaissance and review of core drilling.

While RGH documented geotechnical testing and slope stability modeling to verify the inherent stability of the bedrock slopes, it has recommended various other standard geotechnical practices that further ensure that the initial grading, foundations, fill placement/ compaction, and building construction would remain stable on the sloped terrain of the site. These recommendations include use of adequate fill and removal of substandard fill material, subsurface drainage, compaction recommendations tailored for specified areas, and the construction of stable (3H:1V) cut and fill slopes. Fill slopes steeper than 2H:1V would require the installation of a geo-grid¹³ material to increase overall stability (RGH, 2010).

Based on the Project site geotechnical conditions and the findings of the slope stability analysis, there is no evidence to suggest that the slopes supporting the proposed winery and associated facilities would become unstable due to the proposed Project development. This impact is therefore considered less than significant.

Mitigation: None Required.

Impact B.3: Elements of the Project could be located in soils which are either weak, expansive, or prone to creep. These problematic soils could cause long term localized failure of the proposed structures resulting in loss of property, failure of water conveyance facilities, and/or slope failure. This would be a less than significant impact with mitigation.

As discussed in the Setting, the Project site contains weak, expansive, and creep-prone soils. These soils could have detrimental effects to proposed building foundations, tank pads, pipelines, and roadways. Weak surface soils can settle under loads such as fill, foundations, slabs, and pavements as their moisture content increases. Expansive soils can shrink and swell as they lose and gain moisture, and the resulting movements can heave and crack lightly loaded shallow foundations and slabs and pavements. Fills and foundations deriving support from these weak, creep –prone materials would be susceptible and contribute to the down-slope creep and settlement unless properly embedded in bedrock or buttressed (keyed, benched, drained and compacted). The settlement can cause cracks in the slabs and structural distress in the form of cracked plaster and sticky doors and windows.

¹³ Geo-grid material refers to manufactured textile material that is installed to provide increased slope support.

These limitations are common geotechnical issues remedied by standard engineering practices. Nevertheless, for the purposes of this impact analysis, these problematic soils are considered a potentially significant impact of the proposed Project, which would require mitigation.

Mitigation Measure B.3: As recommended by the applicant's geotechnical engineer: The applicant shall adhere to the recommendation provided by the Project geotechnical engineer to reduce the adverse effects of weak soils, expansive soils and creep-prone soils. The detrimental effects of weak soils shall be remediated by strengthening the soils during grading (i.e., excavating the weak soils and replacing them as properly compacted engineered fill). Expansive soils shall be treated by pre-swelling the expansive soils and covering them with a moisture fixing and confining blanket of properly compacted select fill as defined in the geotechnical recommendations. In order to effectively reduce foundation and slab heave given the expansion potential of the site's soils and bedrock, the applicant shall install a blanket thickness of 30 inches. In exterior slab and paved areas, the select fill blanket shall be no less than 12 inches thick. Fill and/or foundation support shall be used below the creeping soils and, outside buttressed areas, the applicant shall design the foundations to resist stresses imposed by the creeping soils. The applicant shall incorporate into the final Project design plans the recommended geotechnical remedies to correct problematic soils and these controls shall become part of the project.

Significance after Mitigation: The geotechnical report prepared by RGH (RGH, 2010), describes remedies for problematic soils. Once incorporated into the final Project design, the prescribed measures would adequately reduce the adverse impacts of problematic soils at the Project site and this impact would be less than significant.

Impact B.4: The Project could result in substantial erosion or the loss of topsoil due to concentrated runoff during construction and after Project completion. This would be a less than significant impact with mitigation.

During the construction of the proposed Project, the use of heavy machinery for grading, trenching, cave drilling, facilities installation, and other proposed activities would disturb surface topsoil layers and cause conditions that accelerate natural soil erosion rates on the Project site. Potential increases in rates of erosion would be recognized during the construction of the proposed project because soil would be exposed. Potential erosion following construction would not be as profound because site improvements, including proposed buildings, pavement areas, and landscaping, would be in place and erodible soil would not be exposed. Erosion is also discussed in Impact C.1 in Section IV.C, Hydrology and Water Quality, as a potential source of sedimentation to Mark West Creek and water quality degradation.

In this discussion, erosion is considered a mechanism that removes substantial topsoil or causes erosion so excessive that it compromises structural elements or utilities associated with the Project. In its geotechnical report, RGH stated that because of topography and location, the Project site would be impacted by surface runoff from the upgradient slopes and site surface soils would be susceptible to erosion and sloughing. Under natural conditions, surface runoff typically "sheet" flows over the ground surface. However, the proposed site grading, landscaping, and

drainage could concentrate the sheet flow into rills, and gullies. The erosion that results could create shallow soil failures (sloughing) and promote slope instability. Surface runoff could also pond against structures and cause deeper than normal soil heave¹⁴ and/or seep into the slab rock. Therefore, being in hilly terrain, the Project would require strict control of surface runoff to provide long-term satisfactory performance of the project elements (RGH, 2010).

The proposed Project design includes long term improvements to the existing road drainage consisting of pervious pavers, vegetated buffers and rock diffusers, rain gardens, boulders keyed into place, sub-drains, keyways, retaining walls, and rock-lined ditches along roadways. The use of the proposed Low Impact Development (LID) BMPs would control stormwater runoff by reducing flow velocity, reduce the sediment load in stormwater by running water through vegetative material, and increase infiltration into the topsoil and underlying fractured bedrock. These BMPs are among those recommended by the RWQCB to achieve pre-development hydrologic conditions and control sedimentation. In addition to onsite controls proposed under the Project, it is important to note that the construction activities for the proposed winery, wine cave, tanks, leachfield, and other associated infrastructure would be covered under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance (Order No. 2009-0009-DWQ) (Construction General Permit). Compliance with the Construction General Permit would ensure that the proposed construction activities would include BMPs to manage stormwater and control sediment and other pollutants from leaving the Project construction site.

Although Project construction-period erosion management requirements of the Construction General Permit and longer term Project-proposed erosion controls would help reduce the potential for concentrated runoff during and after construction surface runoff and potential erosion from up gradient slopes would be a potentially significant impact of the Project. Implementation of Mitigation Measure B.4, below, would be required of the applicant during construction of the proposed Project.

Mitigation Measure B.4: As recommended by the applicant's geotechnical engineer: The applicant shall implement all geotechnical recommendations associated with diverting surface runoff around slopes and improvements, providing positive drainage away from structures, and installing energy dissipaters at discharge points of concentrated runoff. This can be achieved, for example, by constructing the building pad several inches above the surrounding area and conveying the runoff into manmade drainage elements or natural swales that lead down gradient of the site. The applicant shall incorporate recommended erosion controls into the final Project design plans and the controls shall become part of the Project.

Significance after Mitigation: Requirements prescribed by the General Construction Permit and Sonoma County erosion control ordinances, coupled with Mitigation Measure B.4 would reduce the impact of excessive erosion to less than significant.

¹⁴ Soil heave is the swelling of the subsoil caused by increased water pressure.

Impact B.5: The proposed winery buildings, wine caves, and tank pads could be located on unstable geologic materials, which would increase the potential occurrence of ground failure or landsliding. This would be a less than significant impact.

The proposed winery would be placed within the competent sandstone/mélange bedrock, which comprises the ridge underlying the proposed winery and support buildings (Figure IV.B-1). Geotechnical reconnaissance and testing indicates that these materials have adequate strength to support the proposed structural loads without causing instability within the bedrock structure or on the slope (RGH, 2010).

The proposed wine cave would be installed by tunneling into the bedrock underlying the ridge east of and adjacent to Wappo Road. The exploratory borings logs advanced in the area proposed for the wine caves indicate that the underlying material is Franciscan Complex sandstone and mélange. The underlying Sonoma Volcanics are not encountered until at least 64 feet below ground surface, well below the cave level. In addition, no landslide debris has been located on the ridge adjoining the proposed cave. The lack of landslide material on adjacent slopes reduces the potential that vibration from cave tunneling would reactivate previous landslides or triggering new landslides. As discussed in the Chapter III, Project Description, the cave drilling process would be performed with a milling-type cutting tool and would not require blasting. The tunnel excavation would proceed at a rate of a few feet per day. Shotcrete support would be placed daily behind the advancing tunneling equipment to ensure the walls and ceiling is constantly stabilized to prevent roof collapse. The cave floor slope would be at a gentle 1.5 to 2.0 percent grade and prefabricated drainage strips and a subfloor drain rock layer would be emplaced to facilitate drainage of seepage of water out of the cave portals (Condor, 2011 and 2012).

The tank pads proposed for the rainwater harvesting water tanks, domestic water tanks and winery process water treatment facilities would be founded in the competent sandstone/ mélange bedrock (Figure IV.B-1). The foundations in these areas would be constructed by excavating sufficiently below the existing grade to reach competent base rock material, which possesses the strengths required by the geotechnical design criteria for the intended structural loads. In addition, as discussed in Impact B.2, no existing landslides are present in these areas and slope stability analysis determined that slopes underlying these facilities would remain stable under static conditions and in the event of an earthquake.

Impact B.4 discusses the proposed use of BMPs including pervious pavers, rain gardens, and vegetated rock diffusers. These features reduce surface water flow velocity and encourage some infiltration of stormwater to the subsurface soil. A potential secondary impact of these BMPs is over-saturation of surface soil leading to localized slope failure and soil creep. The analysis of this impact included a review of the BMP design and determined that these BMPs would remain stable and not result in a significant environmental impact. For instance, pervious pavers would be designed with an underlying drainage blanket to accommodate the rates of infiltration and avoid the soil saturation. The rain garden would be placed on 2:1 (horizontal to vertical) to 3:1 slope keyed in with large boulders and underlain by 1.5 feet of bioretention soil and up to 6 feet of Class II permeable gravel. This design would enhance deep infiltration to rates over current

conditions thereby reducing the potential for localized saturation and soil failure. While the vegetated rock diffusers would reduce the potential for increased, concentrated flow exiting culverts, they encourage surface drainage and infiltration. These structures would be constructed with perpendicular diffuser pipes covered by drain rock. While this design would result in some infiltration, it would also encourage low-energy downslope sheet drainage and the potential for long-term saturated conditions would be low.

The proposed locations for the winery buildings, wine cave, and tank pads were selected by the applicant because of the stable underlying sandstone/melange unit and lack of proximate landslide deposits. The proposed location takes advantage of stable bedrock, provides a stable geologic foundation, and avoids landslide deposits to reduce the risk of ground failure due to unstable geologic units. The improvements to reduce stormwater flow rates and reduce erosion would control flow and encourage infiltration but that infiltration would not lead to problematic saturated conditions resulting in soil instability. This impact is less than significant.

Mitigation: None Required.

Impact B.6: Elements of the project could be located on soils incapable of adequately supporting the use of septic tanks and leach fields. This would be a less than significant impact.

Domestic wastewater generated at the proposed winery would be collected, clarified, and pre-treated at the aerobic package treatment plant, and then disposed at a new leach field proposed at the 560 Wappo Road property (see Figure III-1). The proposed winery is estimated to generate a maximum of approximately 143 gallons per day (gpd) of domestic wastewater on typical wine tasting days, and up to 355 gpd on the 10 days per year when special events are planned. (Atterbury, 2009). The annual volume of domestic water that would require treatment and disposal, is estimated to be 39,550 gal/yr (Atterbury, 2010). The Project domestic wastewater would then be conveyed to the proposed septic tank and leach field via an approximate 3,000 foot long pipe installed beneath Wappo Road. The proposed leach field would be located on a flat area and consist of a subsurface ½-inch dripline dispersal field (Atterbury, 2012). If the soils were incapable of supporting the volume of leachate or were located on unstable geologic materials, failure of the proposed leach field could result in a release of leachate from the subsurface system.

No landslides are mapped in the leach field location, and RGH did not observe evidence of landslides during their field reconnaissance and logging of test pits (RGH, 2009). The soils at the location are porous clayey or silty sands, sandy clay, and clayey gravel to depths of ½ to 2½ feet. Completely weathered bedrock was observed to 2 to 7 feet bgs and consisted of clayey sand or sandy clay with remnant sandstone clasts. The underlying bedrock consisted of Franciscan Complex sandstone to 8½ feet. No groundwater was encountered during the subsurface investigation (RGH, 2009). RGH included the proposed leachfield in its static slope stability and

seismic slope stability analysis, using methods discussed above and in RGH (2009). The results indicated that the leachfield site would be stable under static and seismic conditions both before and after the proposed leachfield is constructed.

A shallow percolation test was performed for the proposed leachfield in 2009 (Atterbury, 2009 and 2012). A total of 12 test holes indicated an average percolation test rate of 50 inches per minute. The Well and Septic Division of the Sonoma County PRMD approved the permit for the site for a subsurface drip system with a loading rate of 0.400 gallons per square foot per day (PRMD, 2009). As a condition of the approval, the system must be designed by a Registered Environmental Health Specialist or a Registered Civil Engineer.

This impact is considered less than significant because, in compliance with relevant state and local requirements, the leach field design would be required to meet the standards described in the PRMD approval letter, based on the percolation tests. In addition, the geotechnical investigation indicated that the site is stable and suitable for use as a leach field. Compliance with the approved permit would ensure that the proposed leach field would be constructed to function properly. Therefore, with implementation of current permit requirements, impacts related to the proposed leach field are considered less than significant.

Mitigation: None Required.

Cumulative Impacts

Impact B.7: The Project could contribute to cumulative impacts with respect to geology, soils or seismicity. This would be a less than significant impact.

Although the entire San Francisco Bay Area is located within a seismically active region, and with a wide range of geologic and soil conditions, these conditions can vary greatly within a short distance, making the cumulative context for potential impacts one that is more localized. The Cornell Farms property is located within a rural area that is predominantly undeveloped, except for scattered nearby single-family residences on relatively large parcels. On the Cornell Farms property, the existing vineyards are subject to on-going erosion control management practices. Besides the proposed Project, there is no other development proposed within the Cornell Farms property that would contribute to any potential cumulative impacts to geology, soils and seismicity.

As discussed above, the Project would result in certain project-level impacts related to geology, soils and seismic conditions. These Project impacts are largely contained within the Cornell Farms property. An exception is the potential for the Project to result in erosion (Impact B.4) that could lead to increases in sedimentation in stormwater runoff transported off-site. However, as discussed in Impact B.4, compliance with NPDES Construction General Permit BMPs; and installation of proposed long-term stormwater management and landscaping improvements, and implementation of additional measures identified in Mitigation Measure B.4, would ensure

potential short-term and Project impacts to erosion would be less than significant. These requirements, Project elements, and mitigation measures would ensure any potential Project contribution to cumulative erosion effects would similarly be less than significant.

Given these factors, the project's contribution to cumulative effects on geology, soils and seismicity is considered less than significant.

Mitigation: None Required.

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IV.C Hydrology and Water Quality

This section evaluates whether implementation of the proposed Project would result in significant impacts to hydrology and water quality. The Environmental Setting section describes the hydrologic and water quality conditions currently existing at the Project site. The Regulatory Framework section describes the federal, state, and local laws, policies, and other relevant items applicable to the hydrology and water quality conditions at the Project site. The Impact and Mitigation Measures section defines significance criteria used for the impact assessment and presents a discussion of potential Project-related impacts. The evaluation and analysis are based, in part, on review of various technical reports. The primary sources include Project-specific investigations completed by RGH Consultants, Atterbury and Associates, and Todd Engineers, as well as other sources cited at the end of this chapter.

Setting

Regional Hydrology

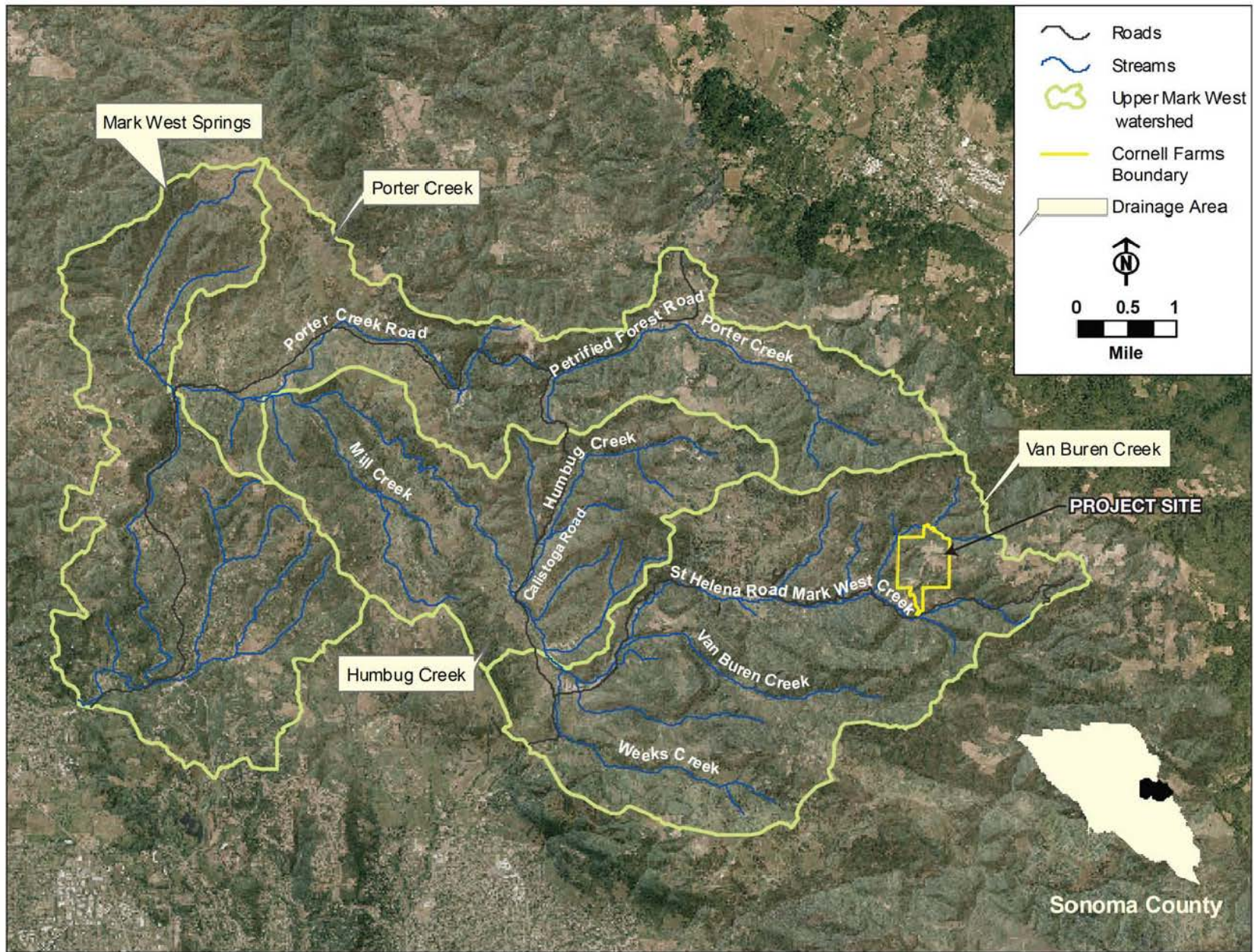
The Project site is part of the larger Russian River watershed, which drains 1,485 square miles of Sonoma and Mendocino Counties and ultimately empties into the Pacific Ocean near the town of Jenner. A major tributary to the Russian River is Mark West Creek, which flows from the hills east of the city of Santa Rosa and across the Santa Rosa Plain to its confluence with Laguna Santa Rosa north of the city of Sebastopol. Laguna de Santa Rosa joins the Russian River five miles downstream of its confluence with Mark West Creek. Water supply in the region is provided by a combination of groundwater and surface water.

The Project site is located in the eastern portion of the 83-square mile Mark West Creek watershed in a drainage area referred to as the Upper Mark West Watershed. **Figure IV.C-1** presents the Upper Mark West Creek watershed and its primary drainage areas. As shown in **Figure IV.C-1**, this 40-square mile watershed includes the drainage areas of Mark West Springs, Porter Creek, Humbug Creek, Mill Creek, Weeks Creek, and Van Buren Creek (SRCD, 2008). The Project site is located north of and adjacent to Mark West Creek, within the far eastern portion of the Upper Mark West Watershed.

Project Site Hydrology

Previous groundwater and hydrologic studies conducted on the Project site by Todd Engineers (Todd Engineers, 2006) further demarcated the watershed boundaries including and surrounding the Cornell Farms property. **Figure IV.C-2** illustrates these watersheds and **Figure IV.C-3** provides a geologic cross-section through the watersheds.¹ In its study, Todd Engineers identified a North Watershed to include the drainage area of the North Fork Mark West Creek, and

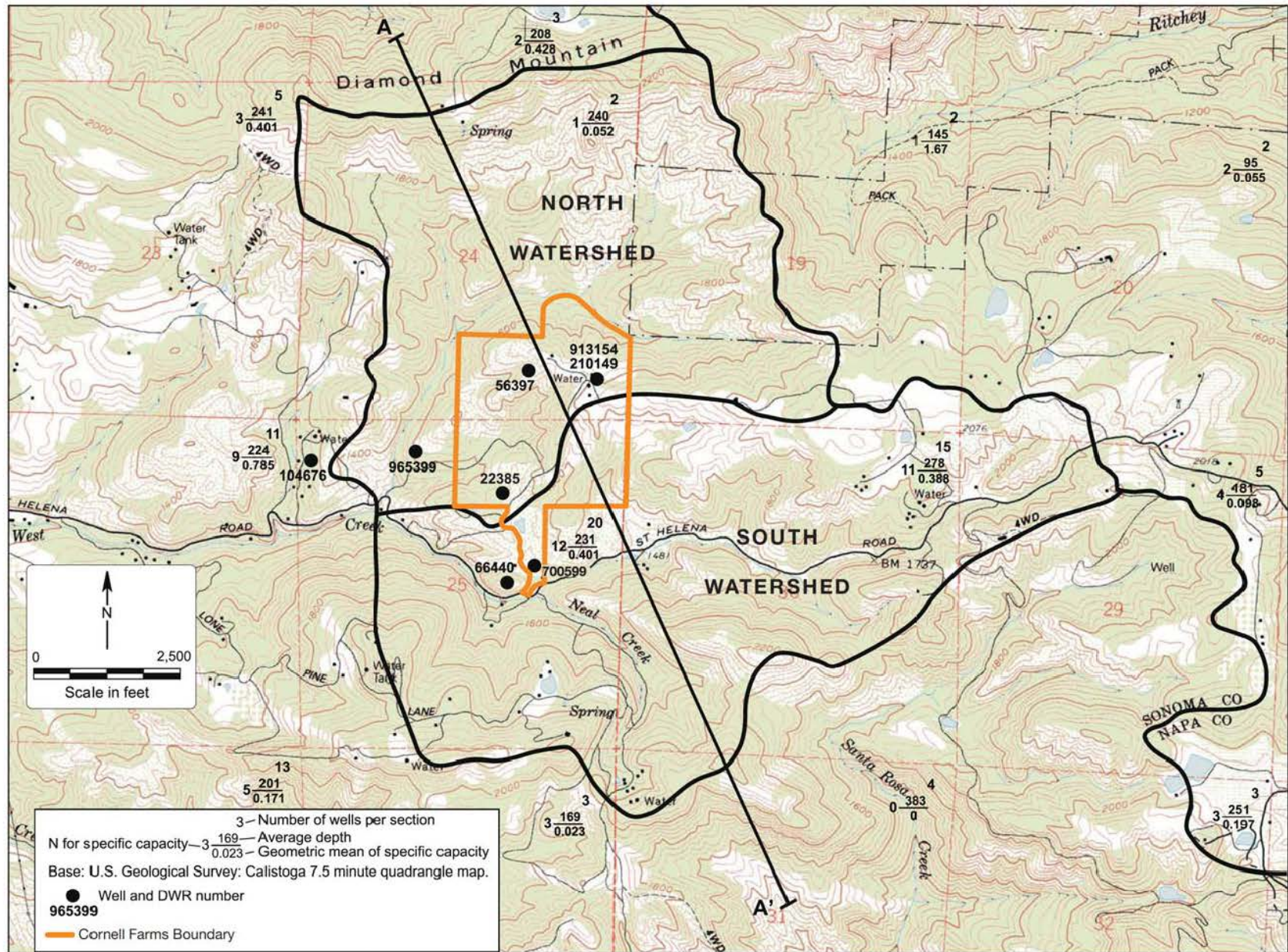
¹ For the purposes of its 2006 groundwater evaluation for the proposed Cornell Winery development, Todd Engineers identified two smaller watersheds that encompass the project site. This was done in order to accurately represent the drainage divide on the property and to assess groundwater conditions.



SOURCE: Sotoyome Resource Conservation District, 2008

Henry Cornell Winery . 211996

Figure IV.C-1
Upper Mark West Creek Watershed

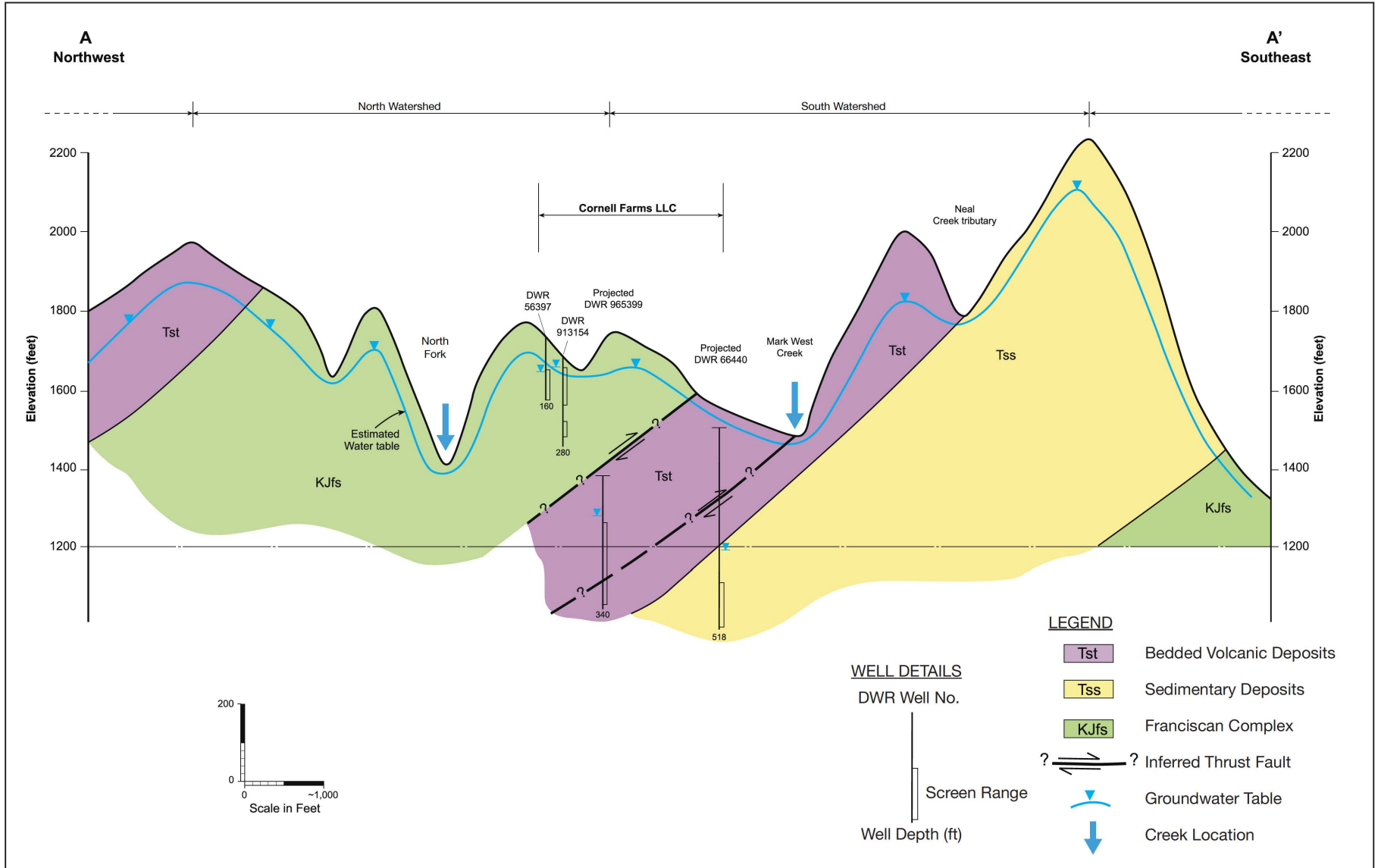


SOURCE: Todd Engineers, 2006

Henry Cornell Winery . 211996

Figure IV.C-2
Watershed Boundaries in Project Site Vicinity

IV.C-4



SOURCE: Todd Engineers, 2006

Henry Cornell Winery . 211996

Figure IV.C-3
Geologic Cross-Section

delimited the South Watershed boundary to include Mark West Creek to its uppermost headwaters including Neal Creek. The North and South Watersheds are about 934 and 1,066 acres, respectively.

As shown in Figure IV.C-2, the Cornell Farms property straddles the drainage divide between the North Watershed and South Watershed forming two separate, primary drainages within the property. **Figure IV.D-1** in Section IV.D, Biological Resources, illustrates the primary on-site drainages. *Drainage A* collects and conveys surface water from south of the drainage divide (i.e., the south-southeast portion of the Cornell Farms property) and discharges to the main stem of Mark West Creek near the intersection of St. Helena Road and Wappo Road. *Pond A*, located near 100 Wappo Road, is an in-stream feature within this drainage. Drainage A is considered an intermittent watercourse; however, the lower reach of Drainage A is perennial and fed from a spring in Pond A.² *Drainage B* collects surface water from the north side of the drainage divide (including the northeast, north, west and southwest areas of the Cornell Farms property) and conveys it off-site into the North Fork Mark West Creek, less than 1,000 feet from its confluence with the main stem. Drainage B is considered an ephemeral drainage.

The dry season in this region runs approximately April until November and as a result of the extended rainless period, summer stream flows, when and where present, are largely comprised of the contribution of groundwater to surface water systems (baseflow) (SRCD, 2008). An increase of water demand during low-flow dry season periods can result, as it has in Upper Mark West Creek watershed, in surface flow becoming intermittent due to the extraction of both surface and groundwater. Very little stream flow data has been collected for Upper Mark West Creek, and even less so for its tributaries. The nearest USGS stream flow gauge for Mark West Creek was located at U.S. Highway 101 from April 1940 to September 1941 (Todd, 2006). Some local water quality data is available, as discussed below in the Surface Water Quality section.

Climate

The Project area is within a Mediterranean climate zone characterized by cool, wet winters and hot, dry summers. Average annual precipitation ranges from 37 inches to 51 inches in the Upper Mark West Watershed (SRCD, 2008). Due to the Mediterranean climate, on average, 95% of annual precipitation in the Upper Mark West Creek watershed falls in November through April, with only 5 percent falling in May through September. Precipitation is lower in the western area of the watershed, and higher in the more mountainous eastern part of the watershed. The average annual rainfall at the Diamond Mountain rain gauge station, located about 1½ miles north of the Project site, ranges from approximately 18 inches recorded during the extreme drought in 1976 to approximately 79 inches recorded in the wet year of 1958. Average rainfall is approximately 51 inches based on precipitation records between 1950 and 1976 (Todd, 2006). This average is consistent with a precipitation study based upon the PRISM (Parameter-Elevation Regressions on Independent Slopes Model) mapping system, developed at Oregon State University, that modeled the average annual precipitation at the Project site area to about 51 inches per year (SRCD, 2008).

² An intermittent water course flows seasonally; an ephemeral drainage flows only after rain events.

Surface Water Recharge Characteristics of Site Soils

Soils within the footprint of the project elements across the majority of the Project site are derived from weathered Franciscan rocks and are mapped as the Goulding Series by the Natural Resources Conservation Service (NRCS) (U.S. Department of Agriculture, 2012). Goulding soils average 8 to 20 inches deep and are well-drained loams.³ Available water capacity (ability of a soil to hold moisture) of the soils range from approximately 0.1 to 2.0 inches, and runoff over these soils is reportedly rapid.

Existing Water Balance

The Todd Engineers groundwater availability study provided a water balance assessment for the existing (pre-Project) conditions (Todd Engineers, 2006). The water balance assessment evaluated water inflow and outflow from the combined Cornell Farms property, the North Watershed, the South Watershed, and the Upper Mark West Watershed. The inflow data were derived from precipitation records collected by the nearby Diamond Mountain rain gauge station, and the Santa Rosa rain gauge station (about 8½ miles to the west). The water balance also incorporated the estimated return flows of water from irrigation that infiltrates back into the ground. The evaluated outflow data was based on evapotranspiration from the Santa Rosa California Irrigation Management Information System (CIMIS) station, stream flow from the Mark West Creek stream gauge station near Highway 101, and the existing groundwater pumping. For the existing conditions, the inflow is equal to the outflow, and is summarized below in **Table IV.C-1** for each of the areas.

**TABLE IV.C-1
SUMMARY OF AREA INFLOW AND OUTFLOW**

Area	Dry Year (acre-feet per year)	Average Year (acre-feet per year)
Cornell Farms Property ^a	309	739
North Watershed	1,660	3,966
South Watershed	1,895	4,524
Upper Mark West Creek Watershed	39,133	93,419

NOTE:

^a The Todd Engineers water balance assessment estimated the Cornell Farms property at approximately 174 acres. Since the time of this analysis, Cornell Farms purchased additional adjacent land, and the Cornell Farms holdings have increased to approximately 187 acres.

SOURCE: Todd Engineers, 2006

Surface Water Quality

The Russian River is on the federal Clean Water Act Section 303(d) list as impaired for several pollutants, including sediment, temperature, dissolved oxygen, indicator bacteria (pathogens), mercury, and specific conductivity. Mark West Creek is listed as impaired by sediment and

³ *Well-Drained* refers to soils that have a appreciable fraction of granular materials, which allows water to readily infiltrate. Well drained soils have high permeability.

temperature (see additional discussion in the Regulatory Framework section, below).⁴ Contributing factors to the sediment impairment in Mark West Creek include erosion from steep slopes combined with development. In addition, in the Upper Mark West Creek watershed, surface and groundwater extraction reduces the available surface water necessary to dilute pollutant concentrations or attenuate the high summer temperatures (SRCD, 2008).

Water Quality Monitoring

The Community Clean Water Institute (CCWI) is a non-profit local citizens watershed group that collects and analyzes water quality data, conducts research, participates in education and community outreach activities, and shares information with government regulatory agencies and the public. CCWI conducted water quality sampling at two nearby locations in Mark West Creek in the vicinity of the Project site, the results of which are summarized below.

Water Quality Monitoring Station MWC120. Station MWC120 on Mark West Creek is located about 4,600 feet downstream of the intersection of Wappo Road with St. Helena Road and was sampled four times from October 21, 2003, to January 29, 2004, and eight times from July 14, 2009, to October 13, 2009. The samples were tested for turbidity (a measure of suspended solids, water clarity and cloudiness), water temperature, pH, dissolved oxygen, conductivity (ability of the water to conduct electricity, measure of dissolved salts), nitrates, and phosphates. Not all parameters were tested at each sampling event. While these data provide a snap shot of winter and summer water quality, the limited data set prevents long-term trend analyses on a season-to season basis (e.g., summer to summer comparisons).

Turbidity is measured in nephelometric turbidity units (NTUs). Salmonids prefer turbidity levels below 10 NTUs (CCWI, 2012). The October and November 2003 turbidity measurements at Station MWC120 in Mark West Creek were 0.38 and 0.83 NTUs, respectively. The eight July through October 2009 turbidity measurements ranged from 0.97 to 6.38 NTUs. All measurements were within the 10 NTUs salmonid preference level. Optimum temperatures for salmonids are between 4 and 16 degrees Celsius. Water temperature measurements at Station MWC120 ranged from 4.9 (January 2004) to 20.4 (July 2009) degrees Celsius.

Other parameters included pH (6.1 to 8.1 pH units), dissolved oxygen (6 to 12.1 milligrams per liter [mg/L]), conductivity (110 to 280 micro-Siemons per centimeter [uS/cm]), nitrates (0.05 to 0.13 mg/L), and phosphates (0.06 to 0.21 mg/L).

Water Quality Monitoring Station MWC150. Station MWC150 on Mark West Creek is located about 3,300 feet upstream of the intersection of Wappo Road with St. Helena Road and was sampled on November 29, 2004, and January 27, 2005, for turbidity, water temperature, pH, dissolved oxygen, conductivity, nitrates, and phosphates. Not all parameters were tested each sampling event. The small data set prevents long-term trend analyses on a season-to season basis (e.g., summer to summer comparisons).

⁴ Section 303(d) of the Clean water Act (CWA) requires that each state identify water bodies or segments of water bodies that are “impaired” (i.e., not meeting one or more of the water quality standards established by the state).

The turbidity measurements at Station MWC120 in Mark West Creek were 1.04 and 1.33 NTUs, both within the 10 NTUs salmonid preference level. The only water temperature measurement was 6.2 degrees Celsius, within the optimum temperature range for salmonids. Other parameters included pH (8.0 and 9.5 pH units), dissolved oxygen (11.7 and 14.2 mg/L), conductivity (210 and 180 uS/cm), nitrates (0.1 mg/L), and phosphates (0.04 mg/L).

Groundwater Hydrology

The groundwater availability studies conducted by RGH and Todd Engineers (RGH, 2004; Todd, 2006, 2007a, 2007b) investigated and described existing groundwater conditions in the Project area. The Todd Engineers study included a review of geologic and topographic maps of the area, evaluation of logs from 88 wells in 13 topographic sections (see Figure IV.C-2), review of hydrologic records (precipitation, evapotranspiration, and stream flow), and a site reconnaissance. This section discusses groundwater wells that are currently located on and surrounding the Project area and provides information regarding the characteristics of groundwater flow. However, this section does not discuss groundwater quality because no groundwater quality data were available for any of the Cornell Farms wells.

Groundwater Wells within the North and South Watersheds

Groundwater beneath the Cornell Farms property flows in fractures, small joints, and cracks within sandstone and mélangé bedrock of the Franciscan Complex and in the younger Sonoma Volcanics Group (Todd Engineers, 2006). Groundwater under these conditions is considered secondary porosity. The Sonoma County PRMD recognizes the difficulty of developing reliable wells in areas of secondary porosity and refers to these areas as Groundwater Zones 3 (marginal groundwater) and Zone 4 (areas with low or highly variable water yield).⁵ Because groundwater occurrence may be limited, Sonoma County PRMD requires a water availability report and documented proof of available groundwater for wells placed in Zone 3 and 4. The Cornell Farms property is divided by the County's Zone 3/Zone 4 boundary line, placing the northern half of the property in Zone 4, and the southern half (including the site of the proposed winery) in Zone 3. The line dividing Zone 3 and Zone 4 closely follows the thrust fault/bedrock contact between the Franciscan Complex and the volcanic rocks. While the thrust fault/bedrock contact may influence groundwater flow to some extent, it is the pervasiveness of water bearing joints, cracks, and fractures that control the groundwater system in this area; success of a well installed in fractured rock aquifers depends on how many fractures are encountered during the drilling of the well (Todd Engineers, 2006).

There are several groundwater supply wells located in the North and South Watersheds and surrounding areas, including five wells on the Cornell Farms property (see Figure IV.C-1). The groundwater supply well that currently provides water for irrigation of the Cornell Farms vineyards, and would provide water for the proposed winery operations is Well No. 913154, located in the North Watershed (see Figure IV.C-1). This well is located in an area designated by

⁵ Major groundwater basins in Sonoma County consist of unconsolidated (loose) alluvial material, rather than bedrock, which contains more water and can promote greater flow to groundwater wells.

the County as a Zone 4 water area where development requires proof of groundwater with a sufficient yield and quality to support the proposed use and information from test wells (Sonoma County, 2008a).

Todd Engineers conducted a well survey that evaluated DWR Water Well Drillers Reports for wells located in the topographic sections within and adjacent to the North and South Watersheds. Figure IV.C-1 summarizes the number of well logs within each section, along with information on the depths and specific capacities.⁶ Most of the wells in the Project area are located along the St. Helena Road/Mark West Creek corridor, and consequently, lie outside of the North Watershed where the water supply well for the proposed winery is located. The average well depth in the survey area ranged from about 100 to nearly 400 feet. Additional details of the wells in the Project vicinity are provided below.

The relatively steep and rugged topography of the survey area results in thin-to-absent alluvial materials, so wells in this area typically have the well screen placed to intersect flow from the fractured bedrock materials.⁷ Todd Engineers noted that, while some of the Well Drillers reports had some initial discharge test information, no formal long-term constant-discharge pumping tests were known to have been performed on any of the wells in the area nor were there any suitable wells for doing so. At a minimum, a formal constant-discharge pumping test would require a pumping well with at least one observation well, both screened within the same aquifer. The nature of the fractured bedrock makes placement of the two wells within the same aquifer unit problematic. Consequently, Todd Engineers used the available information from the Well Drillers reports, their knowledge of the local hydrogeology, and aquifer parameters drawn from published literature to evaluate the aquifer properties, as discussed below.

Hydraulic Properties of the Fractured Rock Aquifer

Todd Engineers evaluated well logs to develop the hydraulic characteristics of specific capacity, transmissivity, and storativity for geologic materials and units within the watersheds (Todd Engineers, 2006). These groundwater parameters are described in further detail, below.

Specific Capacity is a measure that represents the productivity of the well so that it can be compared with itself and to other wells over time. The measure is calculated as the discharge of the well in gallons per minute (gpm) divided by the feet of drawdown. The statistical analysis of the 53 well records with discharge and drawdown information indicated the specific capacity ranges from 0.31 to 0.26 gpm per foot of drawdown.

Transmissivity represents the ease (or difficulty) of water flowing through an aquifer and empirically is directly proportional to the specific capacity and well efficiency (Todd, 1980). The transmissivity for the aquifer tapped by the wells would average between 395 and 460 gallons per day per foot (gpd/ft). Todd Engineers noted these values are consistent with relatively low well yields on the order of 15 gpm or less, typical for a fractured rock aquifer.

⁶ The existence of a well log does not necessarily mean that well is in use or still exists.

⁷ Groundwater wells are constructed so that the zones bearing groundwater can release that water to the well through “screens” in the casing of the well. Screens can be slots or holes that allow water flow.

Storativity is a measure of the relative confinement of the aquifer and, in the case of an unconfined aquifer, is the specific yield of the aquifer. Since formal aquifer tests have not been performed and there are no suitable wells available, Todd Engineers used literature values for a typical fractured rock aquifer for a storativity range of 0.01 to 0.001 (Todd, 1980).

Cornell Farms and Relevant Neighboring Wells

Details of the wells located within the Cornell Farms property boundary, and relevant neighboring wells, are summarized in **Table IV.C-2**, below, and their locations are shown on Figure IV.C-2.

**TABLE IV.C-2
 GROUNDWATER SUPPLY WELLS IN THE VICINITY OF PROJECT SITE**

Well Number	Location	Installation Date	Depth (feet)	Well Screens (feet)	Current use	Estimated Specific Gravity^a	Estimated Discharge
913154	North Watershed, within Cornell Farms Property	2004	270	80 to 100 220 260	Irrigates 20 acres of Cornell Farms vineyards	0.44 gpd/ft	10 gpm
210149a	North Watershed, within Cornell Farms Property	1986	104	44 to 104	Domestic Supply 420 Wappo Road	0.89 gpd/ft	NA
56397	North Watershed, within Cornell Farms Property	1979	160	80 to 160	Domestic Supply for 500 Wappo Road	12.5 gpd/ft	NA
225385	North Watershed, within Cornell Farms Property	1986	175	75 to 175	Domestic Supply for 245 Wappo Road	0.09 gpd/ft	NA
700599	South Watershed, within Cornell Farms Property	NA	NA	NA	Domestic Supply for 100 Wappo Road	NA	NA
104676	North Watershed (outside property)	1979	300	140 to 300	NA	0.64 gpd/ft	NA
66440	South Watershed (outside property)	1979	518	393 to 518	NA	0.17 gpd/ft	NA
935399	North Watershed (outside property)	2004	340	120 to 355	NA	0.15 gpd/ft	NA

NOTES:

Gpd/ft – Gallons per day per foot
 NA – Data or information not Available

^a When most of the groundwater wells were installed, an airlift pump test was performed. Pump tests conducted in this fashion can overestimate discharge and specific capacity by up to 150 percent.

Existing Cornell Farms Vineyards Groundwater Use and Irrigation Methods

Cornell Farms currently uses one water supply well (Well No. 913154; see Figure IV.C-2 for location) to provide water to irrigate the Cornell Farms vineyards. This supply well irrigates approximately 20 acres of Cornell Farms vineyards (30,000 vines) that produce about 100 tons of

grapes per year or about 14,400 gallons of wine. This well is not currently metered, however, based on applicant's experience, this well is typically is operated at a discharge rate of approximately 10 gpm.

The amount of water needed to irrigate the Cornell Farms vineyards and the timing of irrigation annually can vary considerably, and is influenced largely by weather. Vine vigor, cluster development, and nutrient status can also influence irrigation needs. Cornell Farms currently uses approximately 300,000 gallons per year to irrigate its vineyards during a low water demand year (i.e., wet, cool year), to as much as 600,000 gallons per year during a high water demand year (i.e., dry, hot year). Cornell Farms typically begins irrigating the vineyards in late August, or in September, in a high water demand year, and can begin irrigating as late as October during a low water demand year. On rare occasion, earlier irrigation can take place (e.g., when establishing vines in areas where there are re-plants, or when an earlier application might be desired for organic nutrient application to the root system as opposed to a foliar application). Following harvest, Cornell Farms applies a post-harvest vineyard irrigation in late October or early November. Cornell Farms does not require frost protection for the vineyards, and consequently, there is no consumption of water for that purpose.

The Cornell Farms vineyards utilize a Phytogram system for application of water to the vines.⁸ The Phytogram system uses electro-sensors to measure moisture in four discreet zones for grape vines: the soil, the cambrium, the leaf petiole (stem) and the grape berry. This information is relayed to the grower via satellite and accessed remotely, and watering adjustments can be made as needed. Each vine block has its own Phytogram system, and each Phytogram system measures approximately 100 vines. As a result, the grower has detailed information in real time as to how much water is available and how it is moving through all the vines. Use of a Phytogram system such as the one at Cornell Farms are designed to provide the optimum amount of water required for optimum grape quality and avoiding under- or over-watering. This system requires considerably less frequent watering and amount of water use compared to typical mountain vineyards.

Groundwater Source and Movement

The water table is usually a muted expression of the surface topography with water flowing from higher to lower elevations. Todd Engineers noted that there are relatively few wells in the immediate Project area and that water levels have not been regularly recorded. Consequently, the water table depicted on Todd Engineers' cross-section shown in Figure IV.C-3 is an estimate of the groundwater profile based on limited data. Todd Engineers concluded that, in general, groundwater in this area is controlled not by inter-granular porosity typical of an alluvial geologic unit but rather the by joints, cracks, and fractures in the bedrock geologic units (Franciscan Complex and Sonoma Volcanics) referred to as secondary porosity.

⁸ In contrast, typical vineyard practices utilize various other methods to determine the amount of water required for vineyards, such as simply applying a certain amount in a given week, digging holes to determine soil moisture content, or measuring moisture using a pressure chamber.

Regulatory Framework

Federal

Clean Water Act

The Clean Water Act (CWA, 33 USC 1251-1376) is the major federal legislation governing water quality. The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” The CWA established the basic structure for regulating discharges of pollutants into the waters of the U.S. and gave the EPA the authority to implement pollution control programs. Sections 303 and 304 provide for water quality standards, criteria, and guidelines. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

Section 303(d) of the federal Clean Water Act and 40 CFR §130.7 require states to identify water bodies that do not meet water quality standards and are not supporting their beneficial uses. These waters are placed on the Section 303(d) List of Water Quality Limited Segments (also known as the list of Impaired Water Bodies). The List identifies the pollutant or stressor causing impairment and establishes a schedule for developing a control plan to address the impairment. Placement on this list generally triggers development of a pollution control plan called a Total Maximum Daily Load (TMDL) for each water body and associated pollutant/stressor on the list. The TMDL serves as the means to attain and maintain water quality standards for the impaired water body.

The RWQCB lists Mark West Creek as a 303(d) Impaired Water Body for dissolved sediment/siltation and temperature. TMDLs have not yet been established and are under development (RWQCB, 2012).

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) is the principal federal law in the United States that ensures safe drinking water for the public. Pursuant to the Act, the EPA is required to set standards for drinking water quality and oversee all states, localities, and water suppliers who implement these standards.

SDWA applies to every public water system in the United States. There are currently more than 160,000 public water systems providing water to almost all Americans at some time in their lives. The Act does not cover private wells. The SDWA requires the EPA to establish National Primary Drinking Water Regulations (NPDWRs) for contaminants that may cause adverse public health effects. The regulations include both mandatory levels (Maximum Contaminant Levels, or MCLs) and non-enforceable health goals (Maximum Contaminant Level Goals, or MCLGs) for each included contaminant.

State

The primary responsibility for the protection and enhancement of water quality in California has been assigned by the California legislature to the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of state and federal laws and regulations. The RWQCBs adopt and implement water quality control plans (basin plans) that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California and defines water quality objectives as the limits or levels of water constituents that are established for reasonable protection of beneficial uses. The SWRCB administers water rights, water pollution control, and water quality functions throughout the State, while the RWQCB conducts planning, permitting, and enforcement activities. The Porter-Cologne Act requires the RWQCB to establish a regional Basin Plan with water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per federal regulations. Therefore, the regional basin plans form the regulatory references for meeting state and federal requirements for water quality control. Changes in water quality are allowed if the change is consistent with the maximum beneficial use of the state, does not unreasonably affect the present or anticipated beneficial uses, and does not result in water quality less than that prescribed in the water quality control plans. The basin plan for this location is discussed below.

Water Quality Control Plan for the North Coast Region (Basin Plan)

The preparation and adoption of water quality control plans (Basin Plans) are required by the California Water Code (Section 13240). According to Section 13050 of the California Water Code, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. Because beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control.

The North Coast RWQCB is responsible for establishing the beneficial uses of surface water and groundwater within its basin. The *Water Quality Control Plan for the North Coast Region* (Basin Plan) was adopted in May 2011. **Table IV.C-3** presents the beneficial uses listed in the Basin Plan applicable to the Mark West hydrologic subarea⁹ (RWQCB, 2011).

⁹ The Mark West Hydrologic Subarea encompasses the Mark West Creek watershed area.

**TABLE IV.C-3
BASIN PLAN BENEFICIAL USES APPLICABLE TO MARK WEST CREEK AREA**

Beneficial Use	Definition
Municipal and Domestic Supply (MUN)	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Industrial Service Supply (IND)	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 repressurization.
Groundwater Recharge (GWR)	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 (FRSH)	Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).
Navigation (NAV)	Uses of water for shipping, travel, or other transportation by private, military or commercial vessels.
Water Contact Recreation (REC-1)	Uses of water 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, or use of natural hot springs.
Non-Contact Water Recreation (REC-2)	Uses of water 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, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Commercial and Sport Fishing (COMM)	Uses of water for commercial, recreational (sport) collection of fish, shellfish, or other aquatic organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
Warm Freshwater Habitat (WARM)	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.
Cold Freshwater Habitat (COLD)	Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Rare, Threatened, or Endangered Species (RARE)	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.
Migration of Aquatic Organisms (MIGR)	Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.
Spawning, Reproduction, and/or Early Development (SPWN)	Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. Potential beneficial uses may be designated for a number of reasons, including if that beneficial use existed prior to 1975 but does not currently exist, if there are plans to develop such a use, if existing water quality conditions do not support that use but could reasonably be improved to attain that use, or if there is insufficient information to show that the uses exists, but there is potential for the use to exist.

SOURCE: RWQCB, 2011

NPDES Construction General Storm Water Permit

The RWQCB administers the National Pollution Discharge Elimination System (NPDES) storm water permitting program in the North Coast region. Construction activities disturbing one acre or more of land are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (Construction General Permit) and must apply for Construction General Permit coverage. Permit Registration Documents (PRDs) must be electronically filed for all new projects using the Stormwater Multiple Applications and Report tracking Systems (SMARTS), and must include a Notice of Intent, risk assessment, site map, and Storm Water Pollution Prevention Plan (SWPPP) to be covered by the General Construction Permit prior to the beginning of construction. The risk assessment and SWPPP must be prepared by a state qualified SWPPP Developer (QSD).

The Construction General Permit requires that the site be assigned a risk level of 1 (low), 2 (medium), or 3 (high), based on sediment and receiving waters risk. The Sediment Risk is the relative amount of sediment that can be discharged, given the project and location details. The Receiving Waters Risk is the risk sediment discharges pose to the receiving waters. A construction analysis provides a preliminary risk level assessment.

The Construction General Permit requires the preparation and implementation of a SWPPP, which must be prepared before construction begins. The SWPPP would include specific construction-related Best Management Practices (BMPs) to prevent soil erosion and loss of topsoil. BMPs implemented could include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of swales, protection of stockpiled materials, and a variety of other measures that would substantially reduce or prevent erosion from occurring during construction.

Municipal Separate Stormwater System (MS4s)

The CWA was enacted to prohibit the discharge of pollutants to waters of the U.S. from any point source, unless a NPDES permit authorizes the discharge. Regulatory and permitting processes have been established to control the quality of water runoff from urban development. The CWA was amended in 1987, requiring the USEPA to create specific requirements for storm water discharges. In response to the 1987 amendments to the CWA, the USEPA established Phase I of the NPDES Stormwater Program, which required NPDES permits for 1) municipal separate storm sewer systems (MS4s) generally serving or located in incorporated cities with 100,000 or more people (referred to as municipal permits), 2) eleven specific categories of industrial activity (including landfills); and 3) construction activity that disturbs more than 5 acres of land. In March 2003, Phase II of the NPDES Program extended the requirements for NPDES permits to numerous small MS4s, construction sites of 1 to 5 acres, and industrial facilities owned or operated by small MS4s, all of which were previously exempted from permitting requirements. Section 402(p) of the CWA mandates that these municipal storm water permits must: (1) effectively prohibit the discharge of non-storm water to the system except under certain provisions, and (2) require controls to reduce pollutants in discharges from the system to the

maximum extent practicable, including Best Management Practices (BMPs); control techniques; and system, design, and engineering methods.

Since Sonoma County has two major watersheds regulated by two different RWQCBs, it has two MS4 permits. One municipal permit is a Phase I MS4 Permit for municipalities serving more than 100,000 people and is administered by the North Coast RWQCB. The County of Sonoma is a co-permittee with the City of Santa Rosa and the Sonoma County Water Agency for the Phase I boundary, which includes the City of Santa Rosa and unincorporated areas near the cities of Healdsburg, Windsor, Santa Rosa, Rohnert Park, Cotati, and Sebastopol. The other municipal permit is a Phase II General MS4 Permit for municipalities serving between 10,000 and 100,000 people and is administered by the San Francisco Bay RWQCB. The County of Sonoma is a co-permittee with the Sonoma County Water Agency for the Phase II boundary which includes the unincorporated areas near the cities of Petaluma and Sonoma (Sonoma County, 2011).

The Cornell Farms property is within the boundary of areas covered by Phase I MS4 permits administered by the North Coast RWQCB under Order No. R1-2009-0050, NPDES, and therefore must develop a Stormwater Quality Management Program (RWQCB, 2009). To comply with the Phase I MS4 permit, the applicant is required to incorporate Low Impact Development (LID) BMPs into the Project to reduce potential impacts to water quality. LID is a development site strategy that if implemented correctly can maintain and reproduce the predevelopment hydrologic system. LID endeavors to mimic the predevelopment site hydrology infiltration, interception, reuse, and evapotranspiration. Examples of LID BMPs are rain gardens, vegetated swales, and rainwater harvesting—elements that are proposed in the Project design.

General Waste Discharge Requirements for Discharges of Winery Waste to Land

The RWQCB North Coast Region administers Order No. R1-2002-0012, General Waste Discharge Requirements (WDRs) for Discharges of Winery Waste to Land (RWQCB, 2002). The RWQCB defines winery waste as a byproduct of operations that produce wine, and includes bottle and barrel rinse water, equipment floor wash water, pomace and lees.¹⁰ This Order applies to the discharge of the winery process water to the vineyards as irrigation water (among other methods) and provides requirements for treatment, monitoring, and reporting. The treatment requirements for winery processing wastewater to be discharged as drip irrigation water shall not contain constituents in excess of the following limits:

Constituent	Limit (Maximum Per Day)
Biological oxygen demand	160 mg/L
Total suspended solids	80 mg/L
Settleable solids	1.0 mg/L

¹⁰ Winery waste does not include waste produced by agricultural operations associated with the growing of wine grapes.

All WDRs in the North Coast Region are required to implement the Basin Plan. Therefore, the WDRs of Order No. R1-2002-0012 require dischargers to comply with all applicable Basin Plan provisions, including any prohibitions and water quality objectives, governing the discharge. While Order No. R1-2002-0012 establishes minimum standards only for discharges of winery waste, dischargers must comply with any more stringent standards in the Basin Plan.¹¹

Order No. R1-2002-0012 requires treated winery process wastewater to be applied in such a manner so as to not exceed vegetative demand or field capacity, and managed to prevent ponding, runoff and erosion. The Order further requires the discharger to comply with RWQCB's General Monitoring and Reporting Program No. R1-2002-0012.

Local

Sonoma County General Plan 2020

The following policies from the Water Resources Element of the Sonoma County General Plan 2020 are relevant to the proposed Project (Sonoma County, 2008a).

- WR-1c:** Prioritize stormwater management measures in coordination with the RWQCB direction, focusing first upon watershed areas that are urbanizing and watersheds with impaired water bodies. Work cooperatively with the RWQCBs to manage the quality and quantity of stormwater runoff from new development and redevelopment in order to:
- (1) Prevent, to the maximum extent practicable, pollutants from reaching stormwater conveyance systems.
 - (2) Ensure, to the maximum extent practicable, that discharges from regulated municipal storm drains comply with water quality objectives.
 - (3) Limit, to the maximum extent practicable, stormwater from post development sites to pre-development quantities.
 - (4) Conserve and protect natural areas to the maximum extent practicable.
- WR-1g:** Minimize deposition and discharge of sediment, debris, waste and other pollutants into surface runoff, drainage systems, surface water bodies, and groundwater.
- WR-1h:** Require grading plans to include measures to avoid soil erosion and consider upgrading requirements as needed to avoid sedimentation in stormwater to the maximum extent practicable.
- WR-1q:** Require new development projects to evaluate and consider naturally-occurring and human caused contaminants in groundwater.
- WR-2d:** Continue the existing program to require groundwater monitoring for new or expanded discretionary commercial and industrial uses using wells. Where justified by the monitoring program, establish additional monitoring requirements for other new wells.

¹¹ In the event of a conflict between the provisions of Order No. R1-2002-0012 and the Basin Plan, the more stringent provision prevails.

WR-2e (formerly RC-3h): Require proof of groundwater with a sufficient yield and quality to support proposed uses in Class 3 and 4 water areas. Require test wells or the establishment of community water systems in Class 4 water areas. Test wells may be required in Class 3 areas. Deny discretionary applications in Class 3 and 4 areas unless a hydrogeologic report establishes that groundwater quality and quantity are adequate and will not be adversely impacted by the cumulative amount of development and uses allowed in the area, so that the proposed use will not cause or exacerbate an overdraft condition in a groundwater basin or subbasin. Procedures for proving adequate groundwater should consider groundwater overdraft, land subsidence, saltwater intrusion, and the expense of such study in relation to the water needs of the project.

WR-4a: Encourage disposal methods that minimize reliance on discharges into natural waterways. If discharge is proposed, review and comment on projects and environmental documents and request that projects maximize reclamation, conservation and reuse programs to minimize discharges and protect water quality and aquifer recharge areas.

WR-4b: Use water effectively and reduce water demand by developing programs to:

- (1) Increase water conserving design and equipment in new construction, including the use of design and technologies based on green building principles,
- (2) Educate water users on water conserving landscaping and other conservation measures,
- (3) Encourage retrofitting with water conserving devices,
- (4) Design wastewater collection systems to minimize inflow and infiltration, and
- (5) Reduce impervious surfaces to minimize runoff and increase groundwater recharge.

WR-4d: Encourage monitoring for all water use and water metering for public water suppliers that require water users to pay for costs of the amount of water used.

WR-4e: Require water conserving plumbing and water conserving landscaping in all new development projects and require water conserving plumbing in all new dwellings.

WR-4g: Require that development and redevelopment projects, where feasible, retain stormwater for on-site use that offsets the use of other water.

WR-4h: Encourage and support conservation for agricultural activities that increase the efficiency of water use for crop irrigation, frost protection and livestock.

WR-4k: Where consistent with water quality regulations, encourage graywater systems, roof catchment of rainwater and other methods of re-using water and minimizing the need to use potable surface water or groundwater.

Sonoma County Code of Ordinances

The following Sonoma County Code of Ordinances would apply to this proposed Project. The Code is implemented by the Sonoma County Permit and Resource Management Department (PRMD).

Chapter 7 – Building Regulations provides the building regulations that would apply to the construction elements of the project.

Chapter 11 – Grading, Drainage, and Vineyard and Orchard Site Development Regulations provides the regulations for the grading and drainage construction elements of the project.

Chapter 24 – Sewers and Sewage Disposal is also referred to as the Sonoma County On-Site Sewage Ordinance and provides the regulations that would apply to the construction and operation of private sewage treatment and disposal systems. The PRMD also has implementation Policy and Procedure Number 9-2-8.

Franz Valley Area Plan

The Project site is located within the boundary of the *Franz Valley Area Plan*. Originally adopted in 1979 as the *Franz Valley Specific Plan*, the specific plan has since been revised to be made consistent with the current General Plan, and readopted as the *Franz Valley Area Plan*. The *Franz Valley Area Plan* provides the following relevant “constraints and mitigation measures” for hydrology and water quality (Sonoma County, 2008b):

Hydrology

- (1) Within groundwater recharge areas, construction activities, creation of impervious surfaces, and changes in drainage should be avoided through discretionary actions.
- (2) In order to prevent unnecessary erosion and decrease in water quality, enforce the provisions of Chapter 70 of Uniform Building Code.

Water Supply Systems

- (1) Water conservation methods should be encouraged and conservation devices installed in homes.

Sanitary Waste Disposal Systems

- (1) Continue adherence to the regulations of the Sonoma County Environmental Health Department with respect to required percolation tests and creek setbacks.

Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of an impact are based on the environmental checklist in Appendix G of the 2012 CEQA Guidelines. For this analysis, implementation of the proposed Project would be considered to have a significant impact on hydrology or water quality if it would:

- a) Violate any water quality standards or waste discharge requirements.
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop

to a level which would not support existing land uses or planned uses for which permits have been granted).

- c) Substantially alter the existing drainage pattern of a 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 sedimentation on- or off-site.
- d) Substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- f) Substantially degrade water quality.
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- j) Inundation by seiche, tsunami, or mudflow.

Under CEQA, the required analysis extends only to whether the Project would cause impacts on the existing environment, not to whether the environment might affect the Project. Thus, hydrology and water impacts to future occupants of the Project that might arise from the environment rather than from the Project are not within the scope of a CEQA analysis. However, to inform the County about issues of regulatory concern, and for ease of reference, the County has directed that this document apply the criteria above broadly enough to evaluate any such issues, if present.

Due to the location and characteristics of the proposed Project, certain significance criteria are not associated with the Project and therefore, are not considered potential impacts. These hydrologic conditions are addressed briefly below but are not discussed further in this document.

Alteration of Drainage Pattern. The proposed winery buildings, wine cave, domestic water tank and winery process wastewater treatment facilities are located on the ridge along the east side of Wappo Road and are therefore not located within drainages. The proposed rainwater harvesting tank pad and parking area are located on flat area adjacent to the west side of Wappo Road across from the proposed winery buildings, and therefore also not located in a drainage. The proposed leach field is located at the northern end of Wappo Road in an area that is also not located within a drainage. Because these elements are not located in drainages, they would not result in alterations to drainage patterns.

100-Year Flood Zone. The proposed winery and its components are located at approximately 130 vertical feet above Mark West Creek south of the intersection of St. Helena Road and Wappo Road, and therefore not located within a 100-year flood zone of Mark West Creek.

Levees or Dams. There are no levees or dams located within the watershed where the property and the proposed Project are located. Therefore, there would be no impacts relative to levee or dam failure.

Seiche, Tsunami, or Mudflow. There are no large open bodies of water near the Project site, and therefore, the site is not susceptible to damage from seiche activity. The pond below the site is small enough that seismic ground shaking would not generate damaging waves. The Project site is more than 30 miles from the Pacific Ocean, and therefore is not susceptible to coastal hazards (tsunami, extreme high tides, or sea level rise). The Project site is not in the mapped inundation hazard area. The potential for slope instability, including mudflows, is addressed in Section IV.B, Geology, Soils and Seismicity in this EIR.

Impacts and Mitigation Measures

Impact C.1: Construction and operation of the proposed Project could disturb surface soil and the underlying sandstone bedrock, thereby increasing the rate of erosion and potential for sediment to be released to Mark West Creek. This would be a less than significant impact.

The proposed Project would require ground disturbance, tree removal, and/or rough grading to construct proposed building and tank pads, parking lots, the staging areas for proposed wine cave excavation, utilities installation, and proposed improvements along Wappo Road. Exposure and removal of topsoil and the underlying sub-soils during construction could generate sediment that, if mobilized by stormwater runoff or runoff from applied water during construction, could deliver sediment-laden runoff and possibly other contaminants to Mark West Creek. As discussed in the Regulatory Framework section in the Setting, above, Mark West Creek is listed as a 303(d) Impaired Water Body for sediment and temperature. Degradation of the water quality in Mark West Creek could adversely impact the beneficial uses of this water body. Discharge of excess sediment and other pollutants from the project site could exceed sediment discharge objectives or otherwise violate water quality standards prescribed for Mark West Creek in the North Coast Regional Water Quality Control Basin Plan.

The construction activities for the proposed winery, wine cave, water storage tanks, winery process wastewater treatment facilities, leach field, and other associated infrastructure would be required to comply with the Construction General Permit and the Sonoma County Code of Ordinances required as part of the permitting process and cited above in the Regulatory Framework and also discussed in Impact B.4 in Section IV.B, Geology, Soils and Seismicity. The proposed project would be required to comply with the Construction General Permit because over one acre of ground would be disturbed. The Construction General Permit requires that construction sites be assigned a Risk Level depending on geographic location and proximity to a waterway. The Risk Level then determines the stormwater protection and monitoring requirements for the site. Compliance with the Construction General Permit and the Sonoma

County ordinances would ensure that the proposed construction activities would include adequate stormwater protection through Best Management Practices (BMPs) and monitoring to prevent sediment and other pollutants from leaving the construction site.

In addition to regulatory controls that require the applicant to reduce construction runoff from entering Mark West Creek, the project contains specific elements to address operational erosion control. As described and presented in Chapter III, Project Description, and Appendix PD, detailed grading, drainage, and erosion control plans have been prepared by the project's civil engineer (Atterbury, 2011). The proposed stormwater drainage plan designed for the Project includes drainage control features for the proposed winery facilities and Wappo Road. These features are considered consistent with LID BMPs (previously discussed in the Regulatory Framework), which are recommended by the RWQCB to reduce runoff, control sedimentation, and maintain pre-existing hydrology and water quality. LID measures include pervious pavers, rain gardens, vegetated buffers, boulders keyed into place, retaining walls, and crushed rock shoulders. These features are designed to capture and slow the flow of surface water and drop the sediment load. LID stormwater management features promote the infiltration of surface water into the subsurface, thus eliminating their potential for erosion. Currently, none of these erosion-control elements for Wappo Road exist. The placement of these elements would provide a benefit by reducing the potential for sediment to erode into Mark West Creek below Wappo Road.

The proposed Project would be required to comply with the requirements of the Construction General Permit and Sonoma County Ordinances. These regulatory controls would reduce and manage erosion, control stormwater runoff, and reduce sediment delivery to Mark West Creek, which could occur during construction and operation of the proposed winery. In addition, the erosion control elements of the proposed Project would reduce the potential for erosion, the generation of sediment, and the control of stormwater runoff to Mark West Creek. Considering that the regulatory requirements and project elements provide adequate protection to the water quality in Mark West Creek, this impact is less than significant.

Mitigation: None Required.

Impact C.2: If improperly treated or disposed, Project wastewater generated during operation could reduce the water quality of surface water and/or groundwater. This would be a less than significant impact.

The proposed Project would generate two sources of wastewater from operation of the winery: winery process wastewater and domestic wastewater. A description of these two Project wastewater sources, and proposed treatment and disposal, is described below.

Project Domestic Wastewater Treatment and Disposal

Water would be used at the winery for domestic purposes, including for consumption by winery employees, tasting room guests, and dinner guests; and for personal washing, and sanitation (toilets). The annual volume of water that would be used at the winery for winery domestic

purposes (see also Impact C.3, below), and correspondingly, the annual volume of domestic water that would require treatment and disposal, is estimated to be 39,550 gal/yr (Atterbury, 2010).

As described in Chapter III, Project Description, project domestic wastewater would be collected in a conventional septic tank and then pumped to the new leach field at the 560 Wappo Road property. This water would percolate through the leach field, and infiltrate downward through the soil column to be returned (recycled) to the aquifer. Percolation testing and leach field design was approved by the PRMD on June 23, 2009. See Impact B.6 in Section IV.B, Geology, Soils and Seismicity for additional detail on the proposed leach field.

Project Winery Process Wastewater Treatment and Disposal

Winery process water would be generated from proposed activities such as the cleaning of tanks, barrels, equipment, and floors. The annual volume of water that would be used for wine processing operations (see also Impact C.3, below), and correspondingly, the annual volume of winery process water that would require treatment and disposal, is estimated to be 96,000 gal/yr (Atterbury, 2010). This winery process wastewater would contain grape residuals, other residues, and would likely become acidic from the grape juice.

If the winery process wastewater did not undergo proper treatment and/or disposal, and were to come into contact with surface waters and/or groundwater, it could reduce the water quality of these resources, and potentially violate water quality standards prescribed for Mark West Creek in the RWQCB's *Water Quality Plan for the North Coast Region* (Basin Plan), and State and County public health standards prescribed in the County ordinance on sewage disposal.

However, as described in Chapter III, the Project applicant proposes new on-site facilities to treat and dispose of winery process wastewater. Winery process water would be collected and treated on-site in a fully enclosed aerobic package treatment plant where it would undergo primary and secondary treatment, temporarily stored in a tank, and then conveyed to the Cornell Farms vineyards irrigation system to provide supplemental water for the vineyards. Stems and pomace collected from the winery process wastewater would be placed in a compost area on the 560 Wappo Road property, and then reclaimed as a soil amendment in the vineyards.

As discussed in the Setting, the Project would be subject to and be required to be in compliance with the RWQCB North Coast Region Order No. R1-2002-0012, General Waste Discharge Requirements (WDRs) for Discharges of Winery Waste to Land. This Order would apply to the proposed discharge of the treated winery process water to the vineyards as irrigation water and provide requirements for application, treatment, monitoring, and reporting. The Project would be subject to the treatment requirements in the Order's WDRs, as well as all applicable Basin Plan provisions and standards.

Conclusion

Compliance with applicable regulatory controls, including the RWQCB Order for Winery Waste WDRs, and applicable Sonoma County ordinances would ensure that the Project's winery process wastewater and domestic water would undergo proper treatment and disposal to prevent sediment

and sewage from leaving the winery and entering surface water or groundwater. Considering that the regulatory requirements and proposed Project elements would provide adequate protection to the surface water and groundwater quality, this impact is less than significant.

Mitigation: None Required.

Impact C.3: The Project's proposed pumping of groundwater from the aquifer could diminish the dry season base flow to Mark West Creek. This would be a less than significant impact.

Groundwater in the aquifer underlying the Project site ultimately migrates to Mark West Creek. The late summer flow in the Mark West Creek depends on base flow, which is the volume of late summer creek flow that is derived from groundwater flowing out of the aquifer and into the creek where the elevation of the creek bed drops below the elevation of the water table.

The RWQCB lists Mark West Creek as impaired by sediment and temperature and the North Coast Region Basin Plan includes the protection of beneficial uses related to surface water, groundwater, and wildlife for the Mark West Creek watershed. Additional groundwater extraction from the aquifer could potentially lower groundwater levels, thereby depleting the amount of base flow that could otherwise enter Mark West Creek during the dry season. A reduced dry season flow in Mark West Creek could violate the water quality standards prescribed for Mark West Creek and could adversely impact beneficial uses, including, but not limited to, cold water habitat, and migration and spawning for endangered species dependent on that water supply.

As described below, the proposed Project would result in a change from existing conditions in the sources of water, and amount and timing of water use at Cornell Farms. The proposed winery would pump and store groundwater from November through July to supply water for proposed winery operations, and would harvest rain water to irrigate the winery landscaping and supplement irrigation of the Cornell Farms vineyards. The winery would also treat winery process water to supplement irrigation of the Cornell Farms vineyards. As a result, the Project would result in a net decrease in the annual groundwater demand at Cornell Farms and would reduce existing groundwater pumping for irrigation of the vineyards that can occur in late August through early November. See also Impact C.4, which addresses the Project's groundwater pumping effect on other supply wells and local surface waters; and Impact C.5, which addresses the effect of proposed Project rainwater harvesting on the reduction of surface water available to the Upper Mark West Watershed.

Groundwater Demand for Proposed Winery Operations

As discussed in the Setting section, Well No. 913154 is located on the Project site within the North Watershed (see location of well and watershed in Figure IV.C-2), and currently supplies groundwater for irrigation of Cornell Farms vineyards in late summer and in fall (i.e., can occur as early as late August during a dry, hot year to early November). The Setting section also discusses the irrigation methods used by Cornell Farms for its vineyards to ensure that the

vineyards use the appropriate amount of water the grapes need depending on climatic conditions, without over irrigating.

Under the Project, the proposed winery would use Well No. 913154 as its supply well to provide water for proposed winery operations. An estimated 96,000 gal/yr¹² of groundwater would be extracted from the Project supply well for the winery processing operations and 39,550 gal/yr¹³ of groundwater for the winery's domestic water purposes, for a total of 135,550 gal/yr, or 0.42 acre-feet/year, of groundwater. Groundwater would be extracted during the rainy season and early dry season (i.e., November through July 31) and no pumping would occur during the dry months of August, September and October. Groundwater for the winery operations would be pumped to, and stored in, the two new surge tanks located at the top of the ridge on the 245 Wappo Road property with a combined capacity of 102,000 gallons (Atterbury, 2010). The water in these storage tanks could also be used for fire protection water, if needed. While some of the stored water would be used year-round for wine processing operations and for domestic purposes, the winery would experience a peak in water use during harvest and crushing season, typically between September 15 and November 1. **Table IV.C-4** presents a breakdown of estimated monthly groundwater demand volumes for the proposed winery.

Proposed Rainwater Harvesting

The Project proposes to harvest and store rain water on the winery site to be used to establish and maintain the winery landscaping vegetation, and to provide supplemental water for irrigation of the Cornell Farms vineyards (see Use of Harvested Rainwater, below). Rainwater would be collected during the rainy season from impervious surfaces (i.e., from the roofs of the winery buildings, covered apron and terrace area, tank pads, and the pump house roof). The combined surface area available for rainwater capture is estimated at approximately 23,250 square feet (Atterbury, 2012). The rain water would be conveyed through pipes, and stored in two 70,000 gallon tanks located west of Wappo Road, for a total rainwater storage capacity of 140,000 gallons. The stored water in the tanks would then be conveyed to the winery landscaping and Cornell Farms vineyards irrigation systems. The proposed rainwater collection system would include an underground cistern, which would be installed beneath the proposed parking area to temporarily store stormwater runoff prior to pumping it into the storage tanks between storm events.

Evaluation of the potential volume of rainwater that could be harvested annually by the Project considered available precipitation records from the local rain gauge station at Diamond Mountain, located about 1½ miles north of the Project site, and the Santa Rosa rain gauge station, located

¹² Project annual process water use estimated using follows (Atterbury, 2010):
4 gal process wastewater produced per gallon of wine (industry standard) x 24,000 gal wine = 96,000 gpy

¹³ Project annual domestic water use estimated as follows (Atterbury, 2010):

7 employees x 15 gpd x 260 working days per year	= 27,300 gpy
15 tasting rooms guests x 2.5 gpd x 260 working days per year	= 9,750 gpy
10 dinner guests x 25 gpd x 10 events per year	= <u>2,500 gpy</u>
Total domestic water use	= 39,550 gpy

**TABLE IV.C-4
 SUMMARY OF PROJECT WINERY WATER USE, BY MONTH**

Month	Winery Groundwater Demand			Proposed Monthly Pumping Schedule for Winery (gallons)	Winery Harvested Rainwater Demand		Estimated Rain Water to be Harvested at Winery ^{e,f} (gallons)	Estimated Winery Treated Process Water ^{g,h} (gallons)
	Winery Processing ^a (gallons)	Winery Domestic Purposes ^b (gallons)	Total ^c (gallons)		Interim Project Conditions ^d (gallons)	Long-Term Project Conditions ^d (gallons)		
January	6,797	3,296	10,093	19,635	0	0	29,400	6,797
February	6,557	3,296	9,853	28,912	0	0	25,200	6,557
March	7,517	3,296	10,813	33,385	5,786	1,447	19,600	7,517
April	5,837	3,296	9,133	9,133	11,573	2,893	9,800	5,837
May	3,440	3,296	6,736	6,736	11,573	2,893	4,200	3,440
June	5,360	3,296	8,656	8,656	11,573	2,893	0	5,360
July	4,723	3,296	8,019	8,019	11,573	2,893	0	4,723
August	6,247	3,296	9,543	0	11,573	2,893	0	6,247
September	15,763	3,296	19,059	0	11,573	2,893	0	15,763
October	19,277	3,296	22,573	0	11,573	2,893	8,400	19,277
November	9,283	3,296	12,579	12,579	5,785	1,447	18,200	9,283
December	5,200	3,296	8,496	8,496	0	0	25,200	5,200
Total	96,000	39,550	135,550	135,550	92,582	23,145	140,000	96,000

NOTES:

- a Please see Footnote 12 for how annual Project winery process water use was estimated by applicant. Monthly Project winery process water use proportioned based on industry data.
- b Please see Footnote 13 for how annual Project winery domestic water use was estimated by applicant. Monthly Project winery domestic water use equally proportioned.
- c Annual Project winery process water use plus Project domestic water use = total annual Project groundwater demand.
- d Please see Footnotes 14 and 15 for how worst-case annual water budget for irrigation of Project winery landscaping was estimated by applicant under Interim and Long-term Project conditions.
- e Monthly rainfall distribution based on recorded rainfall data at the Diamond Mountain rain gauge station.
- f See text; harvested rainwater to be used for landscaping irrigation and to supplement Cornell Farms vineyard irrigation.
- g Project water demand for winery processing = Project winery treated process water generated.
- h See text; winery treated process water to be used to supplement Cornell Farms vineyard irrigation.

about 8½ miles to the west (Todd Engineers, 2006). The inclusion of the Santa Rosa rain gauge records provides a conservative estimate because the Santa Rosa rain gauge station is at a lower elevation to the west and does not receive as much rain as higher elevations, such as the Project site. The local rain gauge station at Diamond Mountain received an annual average of about 51 inches of rain between 1950 and 1976, which includes the drought year of 1976 (Todd Engineers, 2006). The annual average of approximately 51 inches for the Project site was further confirmed in the *Upper Mark West Watershed Management Plan*, which used modeling techniques to estimate rainfall amounts based on elevation (SRCD, 2008). The annual average for the Santa Rosa rain gauge station between 1930 and 2005 is about 31 inches.

Rainfall of 51 inches falling on the proposed rainwater harvesting collection area, and thus, available to fill the proposed rainwater storage tanks, would produce approximately 738,300 gallons, which would be more than enough to fill the 140,000-gallon rain water storage

tanks. The minimum amount of annual rainfall necessary to fill the rainwater storage tanks would be approximately 9.67 inches, which is less than the minimum recorded rainfall of 11.38 inches at the Santa Rosa gauge station (i.e., drought year of 1976), which provides a conservative estimate. The Diamond Mountain and Santa Rosa rain gauge stations have never recorded an annual rainfall as low as 9.67 inches. Thus, in the worst-case scenario of a 1976 drought using the Santa Rosa rain gauge station rainfall volumes, the rainfall from 11.38 inches falling on the proposed rainwater harvesting collection area would produce 164,900 gallons, more than enough to fill the rain water storage tanks.

Table IV.C-4 presents a breakdown of the estimated rainwater that would be harvested monthly at the proposed winery.

Use of Harvested Rainwater

The harvested rainwater would initially be used to establish the winery landscaping vegetation, estimated to be one to three years. Once the landscaping vegetation is established, on-going irrigation of the winery landscaping would be required. The stored rain water would also provide supplemental water for irrigation of the Cornell Farms vineyards in late summer and in fall.

Accordingly, two Project operational conditions were assessed for use of harvested rain water in this EIR: 1) Interim Project condition (first three years of Project), and 2) Long-Term Project condition. Under the Interim Project condition, a greater portion of the harvested rain water would be allocated to irrigate the winery landscaping vegetation (maximum estimate of approximately 92,600 gallons annually over the one- to three-year period) while the newly-planted vegetation is being established.¹⁴ Under the Long-Term Operations condition, less harvested rain water (approximately 23,100 gallons annually¹⁵) would be needed for on-going maintenance of the winery landscaping (e.g., for insectory purposes, and re-establishment of plants where needed), and correspondingly, more harvested rain water would be available to supplement irrigation of the Cornell Farm vineyards. As discussed below, under either condition, treated winery process water would also be used to supplement irrigation of the Cornell Farms vineyards (see Use of Treated Winery Process Water, below).

Table IV.C-4 provides a breakdown of the proposed monthly use of harvested rainwater for winery landscaping under both Interim and Long-term Project conditions.

¹⁴ Interim Project condition, maximum annual winery landscaping water use estimated by applicant's landscape consultant as follows:

New trees (87 trees x 4 gallons per week x 34 weeks)	=11,832 gallons per year
Large Shrubs (48 shrubs x 2 gallons per week x 34 weeks)	=3,264 gallons per year
Perennial/shrubs/groundcover (1,529 x 1 gallon per week x 34 weeks)	=51,986 gallons per year
Native bunch grasses (1,000 x 0.75 gallons per week average x 34 weeks)	= 25,500 gallons per year
Total Interim worst-case winery landscaping water use	= 92,582 gallons a year

¹⁵ Long-Term Project condition, maximum annual winery landscaping water estimated by applicant's landscape consultant to be 25 percent of Interim Project condition = 23,146 gallons per year.

Use of Treated Winery Process Water

The Project also proposes to treat and store winery process water on-site for use as supplemental water for irrigation of the Cornell Farms vineyards in late summer and in fall. The annual volume of winery process water that would be used at the winery, and hence, that would be treated and available for use as supplemental water for vineyard irrigation is estimated at 96,000 gal/yr. As described under Groundwater Demand for Proposed Winery Operations, above, the use of water for winery processing operations, and correspondingly, the associated treatment of such water, would be greatest during harvest and processing season. Following treatment, the water would be stored in an enclosed 46,000-gallon capacity storage tank, and then conveyed as needed to the Cornell Farms vineyards irrigation system.

Table IV.C-4 provides a breakdown of the estimated monthly winery treated process water that would be generated under the Project.

Summary

Table IV.C-5 presents a summary of the net change in annual water use at the Cornell Farms property under the Project under for the Interim Project condition (first three years of Project), and Long-Term Project condition.

**TABLE IV.C-5
 SUMMARY OF PROJECT NET CHANGE IN ANNUAL WATER USE AT CORNELL FARMS PROPERTY**

Water Use Component	Net Change in Annual Water Use (gallons per year) ^a	
	Interim Project Conditions	Long-Term Project Conditions
Rain Water Harvested to Establish Winery Landscaping (Years 1 through 3) ^b	93,000	--
Rain Water Harvested to Maintain Winery Landscaping ^b	--	23,000
Rain Water Harvested to Supplement Vineyard Irrigation ^b	47,000	117,000
Treated Winery Process Water to Supplement Vineyard Irrigation ^c	96,000	96,000
Groundwater Demand from Project Supply Well to Serve Winery ^d	-136,000	-136,000
<i>Net Reduction in Annual Demand on Project Supply Well</i>	7,000	77,000

NOTES:

- a Numbers are rounded.
- b Please see Footnotes 14 and 15 for how worst-case annual water budget for irrigation of Project winery landscaping was estimated by applicant under Interim and Long-term Project conditions. The available annual harvested rainwater not used for Project winery landscaping would be used to supplement irrigation of the Cornell Farms vineyards.
- c Please see Impact C.2 for how annual Project treated winery process water was estimated by applicant.
- d Please see Footnotes 12 and 13 for how annual Project winery water demand was estimated by applicant.

Under the proposed Project, the Project supply well would serve the proposed winery operations and the existing Cornell Farms vineyards. However, under the Project, the Project supply well would pump less groundwater annually than under existing conditions. As shown in Table IV.C-5, under either the Interim Project condition or Long-Term Project condition, there would be a net

reduction in the annual groundwater demand on the Project supply well (7,000 gallons and 77,000 gallons, respectively) compared to existing conditions, and consequently, a reduced demand on the groundwater aquifer.

Conclusion

The net reduction in annual groundwater pumping under Project conditions is due to the proposed use of harvested rainwater to irrigate the winery landscaping, and use of harvested rain water and treated winery process water to supplement irrigation of the Cornell Farms vineyards. The analysis shows that a sufficient amount of rain water would be harvested annually on-site (even under worst-case drought conditions), such that, in combination with the proposed use of treated process water, these supplemental water sources would reduce the existing annual groundwater pumped at Cornell Farms, and consequently, reduce the annual demand on the aquifer. Furthermore, the proposed winery would limit its proposed pumping of the supply well for winery operations to the months of November through July, and would reduce the existing groundwater pumping for irrigation of the Cornell Farms vineyards that can occur between late August and early November.

Even when considering just the dry season for the Upper Mark West Creek watershed (April to November), while the Project would include new groundwater pumping to serve the proposed winery in April through July, there would be a net decrease in total groundwater pumping at Cornell Farms over the dry season compared to existing conditions, including a reduction of existing groundwater pumping during the critical dry season months of August through October. Consequently, the Project would not further diminish dry season baseflow to Mark West Creek. Given these factors, the impact is less than significant.

Mitigation: None Required.

Impact C.4: The Project's proposed pumping of groundwater from the aquifer could lower water levels in other supply wells resulting in reduced yield or well damage, or draw surface flow from local surface waters, including creek and ponds. This would be a less than significant impact.

Groundwater extraction from a single supply well can impact neighboring wells if the areas of pumping influence (also known as the cone of depression) generated by each well intersect to cause a localized lowering of the groundwater elevation. While seasonal fluctuation in groundwater levels is expected, additional drawdown caused by excessive pumping in one or more neighboring wells can draw the groundwater levels in the aquifer to a depth that reduces well yield or damages nearby wells. Typically, drawing groundwater to a level below the top of a well intake screen can cause cavitation,¹⁶ corrosion, and loss of suction. For the purposes of this

¹⁶ Well pump cavitation is the introduction of air or gases into the mechanical parts of a pump that are trying to move water. The presence of air or other gases in the actual pump chambers or around the water pump impellers leads to overheating of these parts and mechanical damage to the pump moving parts. Cavitation can also cause the pump to have to work longer to satisfy the water demand and thus its electric motor to overheat, also reducing motor life.

impact analysis, if the Project were to result in the lowering of the groundwater surface in a neighboring well below the seasonal low leading to loss of yield or exposure of the top of the well screen, the impact would be considered significant.

The area of pumping influence around a groundwater well could also radiate laterally to intersect and draw water directly from local surface waters. The surface water features that could be affected by the Project include the North Fork or main stem of Mark West Creek, and nearby ponds.

As discussed in Impact C.3, above, on an annual basis, the Project supply well (Well No. 913154) would be pumped less under Project conditions compared to what currently occurs. The proposed winery would limit its proposed pumping of the supply well for winery operations to the months of November through July, and would reduce the existing groundwater pumping that can occur between late August and early November for irrigation of the Cornell Farms vineyards.

The proposed daily pumping of the Project supply well to serve the winery is presented in **Table IV.C-6**. As shown in Table IV.C-6, proposed groundwater pumping from the Project supply well for the proposed winery operations would be at the same discharge rate currently used to serve the Cornell Farms vineyards (i.e., 10 gpm). Any continued (but reduced) groundwater pumping for irrigation of the existing Cornell Farms vineyards would also be conducted at the existing discharge rate of 10 gpm as well.

**TABLE IV.C-6
 SUMMARY OF ESTIMATED DAILY GROUNDWATER PUMPING
 FOR THE WINERY, BY MONTH**

Month	Average Daily Winery Groundwater Demand^a (gallons)	Average Daily Pumping Time (minutes) to Serve Winery @ 10 gpm^b
January	633	63
February	1,033	103
March	1,077	108
April	304	30
May	217	22
June	289	29
July	267	26
August	0	0
September	0	0
October	0	0
November	419	42
December	274	27

NOTES:

- ^a Estimated monthly winery groundwater demand divided by number of days per month.
- ^b Estimated daily winery groundwater.

Groundwater Pumping Radius of Influence

The potential for groundwater pumping interference of the Project supply well with neighboring wells was previously evaluated (Todd Engineers, 2006, 2007a, 2007b). The radius of influence for the Project supply well was estimated to range from about 102 feet when pumped at 15 gpm for 18 hours per day to about 323 feet when pumped at 15 gpm for 18 hours per day (Todd Engineers, 2006, 2007a).

These groundwater pumping conditions would represent maximum pumping that the Project supply well could accommodate in terms of pumping rate. As discussed above, all groundwater pumping of the Project supply well to serve the proposed winery (and future pumping for irrigation of the existing Cornell Farms vineyards) would be conducted at a pumping rate of 10 gpm, which is the pumping rate currently used for this well. Furthermore, as shown in Table IV.C-6, the proposed average daily pumping duration of the Project supply well to serve the winery would be at a considerably shorter duration (i.e., total of 22 to 108 minutes daily) than the pumping duration considered in the worst-case pumping scenario (i.e., 18 hours per day). As a result, this maximum pumping condition reflects pumping up of to 27,000 gallons per day (gpd), where the Project would on average only pump between 217 gpd and 1,077 gpd for winery operations. Consequently, the maximum estimated radius of influence of the Project supply well (323 feet) used in this EIR is considered highly conservative in evaluating the potential impact of groundwater pumping for the winery to other wells.

This maximum radius of influence is also considered conservative in addressing the impacts of any potential period of combined daily groundwater pumping of the Project supply well (for the proposed winery and the Cornell Farms vineyards) to other wells and creeks. It should be noted that, given the proposed monthly pumping schedule and the existing pumping schedule for the Cornell Farms vineyards, the potential for any combined daily groundwater pumping for the proposed winery and the Cornell Farms vineyards would be limited primarily to early November. Any potential for combined daily groundwater pumping for the proposed winery and the Cornell Farms vineyards would be off-set by the availability of harvested rain water and treated process waste water to supplement the irrigation of the vineyards.

For context, the actual estimated radius of influence associated with proposed groundwater pumping for the winery in its peak month (in March – see Table IV.C-6), would be 92 feet. Furthermore, the actual estimated radius of influence associated with any combined groundwater pumping for the winery and groundwater pumping for the Cornell Farms vineyards (in early November) would be 260 feet.

Project Groundwater Pumping Influence on Other Groundwater Supply Wells

There are three down gradient off-site wells (Nos. 965399, 104676 and 66440, as shown on Figure IV.C-2) in the vicinity of the Project supply well. Off-site Well No. 965399 is located in same watershed (North Watershed) as the Project supply well, but is about 3,300 feet downgradient of the Project supply well, which places this well far outside of the maximum radius of influence for the Project supply well. Off-site Well Nos. 104676 and 66440 are located even farther away from the Project supply well. Furthermore, Well Nos. 104676 and 66440 are

located outside of the North Watershed, where the Project supply well is located, and therefore could not be affected by the pumping of Project supply well because those wells are not screened in the same aquifer in the same watershed. Therefore, pumping at the Project supply well would not lower the groundwater surface at off-site Well Nos. 965399, 104676 and 66440 causing a reduction in yield or other adverse well conditions.

In addition to the Project supply well, there are four wells within the Cornell Farms property (Well Nos. 56397, 22385, 700599 and 21049a) which provide domestic water for residences on the property. On-site Well No. 56397 (on the 500 Wappo Road property) and Well No. 22385 (on the 245 Wappo Road property) are located about 1,200 feet west and 2,300 feet southwest, respectively, of the Project supply well, and are therefore outside of the maximum radius of influence. On-site Well No. 700599 (on the 100 Wappo Road property) is located about 3,100 feet south of the Project supply well in the South Watershed and is therefore also outside of the maximum radius of influence, as well as outside of the same watershed. Pumping at the Project supply well would therefore not lower the groundwater surface at these three on-site wells causing a reduction in yield or other adverse well conditions.

The fourth on-site well, Well No. 210149a, provides domestic supply for, a house at 420 Wappo Road. The screen of this well extends from 44 to 104 feet and the well is located less than 100 feet from the Project supply well, which is screened from 80 to 100 feet, and from 220 to 260 feet. Well No. 210149a is screened at the same depth as the upper screen portion of the Project supply well and is located within its radius of influence. Therefore, there is the potential that well interference currently occurs between Well No. 210149a and the Project supply well when these wells are operated concurrently (i.e., for domestic water and irrigation of the Cornell Farms vineyards, respectively). Under the proposed Project, the Project supply well would be pumped for winery supply in all months of the year except August through October, and consequently, there would be the potential for interference with Well No. 210149a during these additional months of use. However, given the proposed pumping rate of 10 gpm and the proposed daily pumping duration (30 to 90 minutes) of the Project supply well for the winery, the interference at Well No. 210149a would not exceed 3 feet of additional drawdown, and would therefore not represent a potential for decreased yield or well damage.

Project Groundwater Pumping Influence on Local Surface Waters

The maximum radius of influence of the Project supply well that was used to evaluate the potential impact of pumping to other wells (addressed above) is also used to evaluate the potential impact to local surface waters, including the main stem of Mark West Creek, its North Fork, and nearby ponds. The North Fork of Mark West Creek is located approximately 1,000 feet northeast, the main stem of Mark West Creek is located approximately 3,600 feet south, and nearby surface water ponds are located approximately 2,400 feet and 2700 feet southwest of the Project supply well. Consequently, these surface waters are located well beyond the estimated radius of influence of the Project supply well. Furthermore, Mark West Creek is located outside the North Watershed boundary.

Summary and Conclusion

This analysis evaluated whether groundwater pumping from the Project supply well would adversely impact neighboring groundwater supply wells or the local surface water sources, including North Fork Mark West Creek and the surface water ponds. The analysis determined that the proposed pumping rates would 1) not draw down the groundwater surface to a level that would decrease well yield or cause well damage and 2) not cause a radius of pumping influence that would intersect or otherwise draw water away from the local surface water sources. This impact would therefore be less than significant.

Mitigation: None Required.

Impact C.5: The proposed Project rainwater harvesting would result in the reduction of surface water available to the Upper Mark West Watershed. This would be a less than significant impact.

Under existing conditions, precipitation falls on the ground within the footprint of the proposed winery and tank pads. The majority of this rainfall flows as surface water runoff, enters drainages, and then flows through the Upper Mark West Watershed, the Russian River, and ultimately, the Pacific Ocean. Throughout the rainy season, a fraction of that precipitation infiltrates into the ground, saturates the soil and recharges the aquifer, eventually becoming dry season base flow in Mark West Creek. A smaller fraction of the precipitation falling on the Project site is taken up by vegetation or evaporated back to the atmosphere (evapotranspiration).

The rainwater harvesting element of the Project consists of harvesting 140,000 gal/yr or 0.43 acre-feet per year of rainwater during the wet season from rooftops and tank pads, and storing that water for irrigation of winery landscaping and to supplement irrigation of the Cornell Farms vineyards. Rainwater would be harvested during the wet season, which typically occurs from October through May (243 days) in the Project area, with the heaviest rainfall occurring in the months of November through March. Thus, as a result of the proposed Project, the volume of water currently entering the creek during the wet season would be reduced by about 140,000 gal/yr.

The Project rain water harvest volume of 140,000 gal/yr would represent about 0.00046 percent of the total average annual flow volume in the Upper Mark West Watershed (approximately 93,400 acre-feet per year), and about 0.001 percent of the total annual dry year flow volume in the watershed (approximately 39,100 acre-feet per year). When focusing on just the North Watershed (see Figure IV.C-2), the Project rain water harvest volume of 140,000 gal/yr would represent about 0.01 percent of the total average annual flow volume in the North Watershed (approximately 4,000 acre-feet per year), and about 0.03 percent of the total annual dry year flow volume in the North Watershed (approximately 1,700 acre-feet per year). Given that the surface flow that would be collected and contained by the Project would be harvested only during the rainy season, and would represent only a minor amount of surface water that would otherwise contribute to the Mark West Creek watershed, this impact is less than significant.

Mitigation: None Required.

Cumulative Impacts

Impact C.6: The Project could contribute to cumulative impacts on hydrology and water quality. This would be a less than significant impact.

The cumulative context for the proposed Project includes proposed Project development along with other past, present or reasonably foreseeable future developments that may occur within the Upper Mark West Creek watershed.

The Sotoyome Resource Conservation District (SRCD) estimates the existing land use breakdown within the Upper Mark West watershed as approximately 54% forest/chaparral/ grassland/pasture, 30% rural residential/vacant rural residential, 6% vineyards, and 10% other miscellaneous (SRCD, 2008). Existing uses and development along the St. Helena Road corridor from Calistoga Road in the west to the Sonoma-Napa County line to the east is largely open space with some rural residential development located along St. Helena Road and Mark West Creek, and some agricultural uses, including, but not limited to, scattered vineyards and a Christmas tree farm. The vineyard located nearest the Cornell Farms property is the approximately 83-acre Pride Mountain Vineyards, about 3,000 feet to the east at the top of the watershed straddling the Sonoma-Napa County line, with vineyards on both sides of the ridge that separates the watersheds. The Constant-Diamond Mountain Vineyard is located approximately 0.8 miles to the north atop Diamond Mountain, also straddling the Sonoma-Napa County line. The St. Helena Road Vineyards and Winery, and the Fisher Vineyards, are located approximately 1½ miles and 2¼ miles west of the Cornell Farms property, respectively. Water use data for these vineyards and wineries is not available.

With respect to future uses, Sonoma County PRMD is not aware of any other specific proposed future development projects in the Project site vicinity. As a result, the proposed Project represents the only reasonably foreseeable proposed discretionary development in the low density, rural eastern portion of the Upper Mark West Creek Watershed. Water constraints limit the development potential in the area. Although speculative, it is anticipated that there will be some continued development in the area that will require ministerial permits and result in some impacts in the future. This analysis takes into account the effect of such development.

Because of the Project area's climate, summer stream flows, when and where present, are largely comprised of base flow, or the contribution of groundwater to surface water systems. An increase of water demand during low-flow dry season periods can result, as it has in the existing condition in the Upper Mark West Creek watershed, in surface flow becoming intermittent due to the extraction of both surface and groundwater. In recognition of limited summer flow conditions, the SWRCB has designated Mark West Creek upstream of U.S. Highway 101 as a fully appropriated stream during the months of May through October, meaning that the supply of water in the stream is being fully applied to beneficial uses, and no surface water remains available for appropriation.

The existing development in the area has contributed to the failure to meet water quality goals. As discussed in the Setting section above, the RWQCB lists Mark West Creek as impaired by sediment and temperature. The primary contributing factors to the impairment are the steep slopes and development that contribute sediment to the creek and groundwater extraction that reduces the base flow in the late season months, which resulted in the creek being listed for sediment and temperature. As discussed in Section IV.D, Biological Resources, land use practices have led to deterioration of suitable spawning and rearing habitat for salmonids over the past several years. As discussed in Impact D.6, the SRWCB has recently concluded that there is no evidence that existing groundwater use at Cornell Farms is responsible for diminished flows in Mark West Creek, or responsible for the fish strandings recently observed in the section of the North Fork of Mark West Creek below St. Helena Road (SWRCB, 2012).

A recently completed study assessed the potential effect of land use development on changes in streamflows (particularly low summer flows) in Russian River tributary streams, and the related effect on declining fish populations (and specifically threatened salmonid species) (Grantham, et al., 2012). The study analyzed juvenile steelhead survey data from several stream reaches in Sonoma County, including three reaches of Mark West Creek downstream of the Project site. The study concluded that reductions in summer low flows, either from natural drought, or water withdrawals, is likely to reduce juvenile fish survival, and thus, the protection of summer streamflows is important for the conservation of threatened salmonid populations. The study indicated that intensive agricultural land use, such as vineyards, can have an adverse effect on juvenile steelhead populations; specific reasons cited for this are the reliance by many vineyards on groundwater pumping or direct surface water diversion to meet their water demand. The study also revealed, however, that there are opportunities for vineyard landowners to help to restore summer flows, and consequently, have a positive effect on these populations. Examples provided for helping to restore summer flows included increasing the capacity for on-site water storage and collection of water during high winter flows to limit the water diversions during the growing season.

Cornell Farms vineyards is an existing operation that would continue under the Project. The proposed winery proposes a number of improvements in water management at Cornell Farms that would benefit both the proposed winery and the Cornell Farms vineyards in terms of water use and water conservation. As discussed in Impact C.3, above, the proposed use of harvested rain water and treated winery process water would result in a net decrease in the combined groundwater pumping to serve the winery and vineyards. Furthermore, the Project would eliminate groundwater pumping in the dry season months of August, September and October, which would improve late summer baseflow conditions or at least not contribute to further reduction of baseflow in Mark West Creek. As discussed in Impact C.4, the radius of influence from the Project supply Well would not intersect or draw surface water from the main stem of Mark West Creek, the North Fork Mark West Creek, or nearby surface water ponds. In addition, as discussed in Impact C.5, the Project would also redirect a small volume of stormwater runoff away from Mark West Creek during the rainy season.

The project-specific impacts to groundwater and surface flow in Mark West Creek are less than significant. There would be no contribution to dry season cumulative impacts, and only a negligible reduction in wet season flows. Given that there is no evidence of a wet season

cumulative impact, and the Project's contribution to reduction in wet season flows is negligible, the Project contribution would not be considered cumulatively considerable.

In addition, as discussed in the Setting, the *Sonoma County General Plan 2020* and *Franz Valley Area Plan* provide goals, objectives and policies to protect the quality of surface and groundwater resources, including within the Upper Mark West Creek watershed. The plans include policies to minimize erosion and sediment loading into drainages; ensuring groundwater quality and quantity are adequate and not be adversely impacted by the cumulative development; and reducing water demand through water conservation. The proposed project would advance and not thwart these policies that address cumulative impacts.

Mitigation: None Required.

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IV.D Biological Resources

Introduction

This section describes the existing biological resources on the Project site and assesses the potential impacts that could occur with development of the Project. Impacts on biological resources are analyzed in accordance with the California Environmental Quality Act (CEQA) significance criteria (CEQA Guidelines, Appendix G). For impacts determined to be either significant or potentially significant, mitigation measures to avoid or minimize these impacts are identified.

Information Sources and Survey Methodology

The primary sources of information for this analysis are the existing biological resources reports prepared by the Project applicant's biological consultants for the proposed Project (Prunuske Chatham, Inc., 2010; Ted Winfield & Associates et al., 2011; Ted Winfield & Associates, 2012). These reports present the methods and results of vegetation classification and mapping and general and focused habitat assessments and surveys for plants and animals, including special-status species (e.g., the federally-threatened central California coast steelhead [*Oncorhynchus mykiss*], northern spotted owl [*Strix occidentalis caurina*], and California red-legged frog [*Rana draytonii*]). The biological resources report prepared by Ted Winfield & Associates et al. (2011) also presents the methods and results of a tree assessment. The assessments and surveys documented in these reports were conducted in the summer of 2010 and throughout the winter, spring, and summer of 2011. Environmental Science Associates (ESA) staff biologists reviewed the existing biological resources reports to verify the adequacy, completeness, and accuracy for their use in this analysis. These reports are incorporated into this section as applicable.

In addition to the reports listed above, information was obtained from environmental review documents prepared for previous winery development proposals on the Project site, as well as from other planning documents prepared for lands in unincorporated Sonoma County. ESA staff biologists also reviewed public comment letters (Aquatic Systems Research, 2010; Baye, 2011; Avocet Research Associates, LLC, 2012; Higgins, 2012; National Marine Fisheries Service [NMFS], 2012; State Water Resources Control Board [SWRCB], 2012), species lists and occurrence records maintained by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and California Native Plant Society (CNPS) (USFWS, 2012a; CDFG, 2012; CNPS, 2012) and standard biological literature, and conducted a reconnaissance-level field survey on February 14, 2012. The purpose of the field survey was to verify the existing information on vegetative communities and associated wildlife habitats, and habitat use on and surrounding the Project site.

The specific methods used to assess the existing biological resources on the Project site are described at the beginning of each of the subsections in the Setting section below.

Setting

Regional Setting

As previously discussed in Chapter III, Project Description, the Project site is located in eastern Sonoma County approximately 1½ miles west of the Sonoma-Napa County line (see **Figure III-1** in Chapter III). The Project site lies within the Upper Mark West watershed along the southern flank of Diamond Mountain. Diamond Mountain is part of the Mayacamas Mountain range that separates the Sonoma and Napa valleys. Warm to hot, dry summers and mild to cool, wet winters with mean temperatures significantly cooler than those of the valley floor characterize the overall Mediterranean climate of the Project area. The soils of the Project area are of volcanic origin, generally reddish and very fine-grained texture. Vegetation communities and associated wildlife habitats found in the Project area include a mosaic of herbaceous, shrub, and tree dominated types, as well as aquatic and developed types.

Local Setting

The Project site is comprised of five of the seven contiguous legal parcels owned by Cornell Farms, LLC (Cornell Farms property) at 100, 245, 420, 500 and 560 Wappo Road, and are accessed from St. Helena Road via Wappo Road. General land uses surrounding the Project site are vineyard, rangeland, rural residential, and recreational and ecologically protected areas. The Project site topography is varied, with elevations ranging from a low of about 1,360 feet above mean sea level (asl) within a ravine on the western edge of the parcel located at 245 Wappo Road to a high of about 1,780 feet asl along a ridge on the northern edge of the parcel located at 420 Wappo Road. Soils on the Project site belong to two different series; Goulding and Henneke (U.S. Department of Agricultural [USDA], 1972). These series are geographically associated soils and are generally found on mountainous uplands. These soils provide a medium for plant growth and support the following vegetation communities and associated wildlife habitats: grassland, shrubland, and upland forest and woodland. Developed areas and seasonal and perennial waters and wetlands are also present on the Project site. Runoff from the Project site ultimately flows to Mark West Creek. Mark West Creek flows south of the Project site from east to west and eventually drains into the Russian River approximately 16 miles down-stream of the Project site.

Vegetation Communities and Associated Wildlife Habitats

The vegetation communities identified on the Project site are broadly classified as general units (e.g., grassland, shrubland, upland woodland and forest). However, whenever possible, alliances¹ and associations² described in *A Manual of California Vegetation* (Sawyer et al., 2009) are identified within these broader categories. The assignment of alliances and associations are based on descriptions provided in existing biological resources reports, as well as observations by ESA staff biologists. Also, some of the general units are identified as habitats because they are defined as much

¹ “A classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of higher cover, in the uppermost layer or layer with the highest canopy cover” (Jennings et al., 2006, cited in Sawyer et al., 2009).

² “A vegetation classification unit defined by a diagnostic species, a characteristic range of species composition, physiognomy, and distinctive habitat conditions” (Jennings et al., 2006, cited in Sawyer et al., 2009).

by their physical conditions as by their plant species composition or lack of plants (e.g., seasonal and perennial waters and wetlands). The vegetation communities generally correlate with wildlife habitat types as described in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988). The vegetation communities and associated wildlife habitats and their location on the Cornell Farm property, as well as on the Project site, are described below and illustrated on **Figure IV.D-1**.³

Grassland

Annual Grassland. Annual grassland is found throughout the Cornell Farms property. This vegetation community occurs primarily as understory within openings in the shrublands and upland woodlands and forests, but also as a distinct community. In many areas, including areas on the proposed winery development site⁴ (e.g., at the locations proposed for the parking and landscaping areas and vegetative buffers along the edge of Wappo Road), the annual grassland is comprised of primarily non-native species with native species only forming a small percentage of the herbaceous cover, although in a few areas, including areas in the upland woodlands and forests on the Project site, the native species remain rich in number and their cumulative cover makes them dominant.

Common non-native grasses and forbs found in the annual grassland include species such as bird's foot trefoil (*Lotus corniculatus*), bur clover (*Medicago polymorpha*), cat's ear (*Hypochaeris glabra* and *H. radicata*), medusa head (*Elymus caput-medusae*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). Native grasses and forbs found include species such as blue-eyed grass (*Sisyrinchium bellum*), blue wildrye (*Elymus glaucus*), California brome (*Bromus carinatus*), deerweed (*Acmispon glaber*), Idaho fescue (*Festuca idahoensis*), and soap plant (*Chlorogalum pomeridianum*). Scattered native shrubs, including species such as chamise (*Adenostoma fasciculatum*), coyote brush (*Baccharis pilularis*), and poison oak (*Toxicodendron diversilobum*), are also found in this vegetation community, particularly where the grasslands transitions into shrublands.

Animal species that typically inhabit grassland habitats are those that have adapted to dry conditions. These are grazing species, burrowing species, and their predators; insects and spiders are abundant. Some of these species forage in grasslands and retreat to the protective cover of the surrounding habitats (e.g., scrublands and upland woodlands and forests) for shelter and nesting, while others disperse through this habitat. Animal species typically found in grassland habitats include mammals, such as black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), deer mouse (*Peromyscus maniculatus*), and mule deer (*Odocoileus hemionus*), and birds, such as, golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), and western meadowlark (*Sturnella neglecta*). Reptiles are also frequently found in grassland habitats, such as gopher snake (*Pituophis catenifer*), Northern Pacific rattlesnake (*Crotalus oreganus oreganus*), and western fence lizard (*Sceloporus occidentalis*). In addition, grassland habitats that border wetlands and other waters provide habitat for amphibians, such as Sierran treefrog (*Pseudacris sierra*) and western toad (*Bufo boreas*).

³ Not all of the vegetation communities are shown on Figure IV.D-1. The size of a number of the communities is too small given the scale of the map, while others are intermixed with communities represented on the map in a complex pattern or are not distinguishable on the aerial photograph used for the map.

⁴ The location within the Project site where physical development would occur according to the proposed winery site plan (see Figure III-5).



SOURCE: Wiemeyer Ecological Sciences

Henry Cornell Winery . 211996
Figure IV.D-1
 Vegetation Alliance Map

Shrubland

Shrubland found on the Cornell Farms property is classified into the following two alliances described in Sawyer et al. (2009): *Adenostoma fasciculatum* Shrubland Alliance (chamise chaparral) and *Baccharis pilularis* Shrubland Alliance (coyote brush scrub). Each of these alliances is described below.

Chamise Chaparral. Chamise chaparral is generally found on steep north-facing slopes in the northwestern and southern portions of the Cornell Farms property, including areas on the proposed winery development site (e.g., at the locations proposed for the leachfield and rain gardens and vegetation buffers along the edge of Wappo Road). This alliance is dominated by chamise and associated shrubs include species such as chaparral pea (*Pickeringia montana*), manzanita (*Arctostaphylos canescens* spp. *canescens*, *A. manzanita* spp. *elegans*, and *A. manzanita* spp. *manzanita*), and scrub oak (*Quercus durata*). Except for in areas of open or broken canopy, the understory cover of herbaceous species is sparse. Herbaceous species occurring in the understory include forbs such as common woolly sunflower (*Eriophyllum lanatum*), narrowleaf onion (*Allium amplexans*), and woolly Indian paintbrush (*Castilleja foliolosa*), together with grass and forb species found in the grasslands (see above). Scattered coast live oak (*Quercus agrifolia*), interior live oak (*Q. wislizenii*), and Douglas-fir (*Pseudotsuga menziesii*) are also found in this alliance.

Animal species that typically inhabit chaparral habitats are predominantly those that have adapted to very hot and dry conditions, such as insects, spiders, and reptiles. Because of the hot, dry conditions, amphibians are uncommon, as they typically remain near water sources. There are many birds associated with chaparral habitats, but most are not restricted to chaparral and occur in other habitats. Most mammals are small, such as rodents, and are nocturnal to avoid the daytime heat. Animal species typically associated with chaparral habitats include mammals, such as bobcat (*Lynx rufus*), brush rabbit (*Sylvilagus bachmani*), and dusky-footed woodrat (*Neotoma fuscipes*), and birds, such as California quail (*Callipepla californica*), spotted towhee (*Pipilo maculatus*), and wrenit (*Chamaea fasciata*). Reptiles that thrive in chaparral habitat include such species as sagebrush lizard (*Sceloporus graciosus*), southern alligator lizard (*Elgaria multicarinata*), and western fence lizard.

Coyote Brush Scrub. Coyote brush scrub is primarily found intermixed with the grasslands in the southern portion of the Cornell Farms property, including areas on the proposed winery development site (e.g., at the locations proposed for the vegetation buffers along the edge of Wappo Road). Although stands of coyote brush are found elsewhere on the proposed winery development site (e.g., at the locations proposed for the parking and landscaping areas), these clusters do not satisfy the criterion for membership in the alliance.⁵ Coyote brush is the dominate species with individual shrubs ranging in height from three to eight feet. Herbaceous species occurring in the understory include those grasses and forbs found in the surrounding grasslands (see above).

Animal species inhabiting scrub habitats are predominantly those that have adapted to dry conditions, such as insects, spiders, and reptiles. There are also many birds and mammals that are associated with this habitat, but most are not restricted to scrub and occur in the surrounding

⁵ Coyote brush must have at least 50 percent absolute cover in the shrub layer.

habitats. Typical mammals found in scrub habitat include species such as black-tailed jackrabbit, coyote, and striped skunk (*Mephitis mephitis*). Resident birds include such species as Anna's hummingbird (*Calypte anna*), Bewick's wren (*Thryomanes bewickii*), and spotted towhee. Scrub habitat also provides year-round hunting grounds for many birds of prey, such as red-tailed hawk (*Buteo jamaicensis*) and turkey vulture (*Cathartes aura*). Reptiles such as western fence lizard and Northern Pacific rattlesnake are also typically found in this habitat.

Upland Woodland and Forest

Upland woodland and forest on the Cornell Farms property are classified into the following four alliances described in Sawyer et al. (2009): *Quercus agrifolia* Woodland Alliance (coast live oak woodland), *Quercus wislizenii* Woodland Alliance (interior live oak woodland), *Pseudotsuga menziesii* Forest Alliance (Douglas fir forest), and *Sequoia sempervirens* Forest Alliance (redwood forest). Each of these alliances, as well as associations mixed with the alliances, is described below.

Coast Live Oak Woodland. Coast live oak woodland is found throughout the Cornell Farms property, including areas on the proposed winery development site (e.g., at the locations proposed for the two buildings, wine caves, fire suppression and water storage tank sites, and single-track trail). This alliance includes pure stands and stands with a mixed tree layer, including Douglas-fir and other hardwood species (e.g., California bay [*Umbellularia California*], black oak [*Quercus kelloggii*], madrone [*Arbutus menziesii*], and California buckeye [*Aesculus californica*]). The mixed stands are classified as belonging to the following four associations described in Sawyer et al. (2009): *Quercus agrifolia-Umbellularia californica* Association, *Quercus agrifolia-Quercus kelloggii* Association, *Quercus agrifolia-Arbutus menziesii* Association and *Quercus agrifolia-Aesculus californica* Association. The species composition of the understory vegetation in the coast live oak woodland alliance and associations varies, with poison oak and snowberry (*Symphoricarpos mollis*) as the dominant shrub species. Other shrubs found include species such as California rose (*Rosa californica*), coyote brush, and toyon (*Heteromeles arbutifolia*). Herbaceous species occurring in the understory include grasses and forbs such as California melic (*Melica imperfecta*), common periwinkle (*Vinca minor*), dogtail grass (*Cynosurus echinatus*), Fremont's star lily (*Toxicoscordion fremontii*), paleyellow iris (*Iris pseudacorus*), together with grass and forb species found in the grasslands (see above).

Oak woodlands have the richest species abundance of any habitat in California, with over 330 species depending on them at some phase of their life cycle, including at least 120 species of mammals, 147 species of birds, and approximately 60 species of amphibians and reptiles (Giusti et al., 2005). These habitats are able to sustain such abundant animal species primarily because they produce acorns, a high quality and frequently copious food supply. Other important food resources found in oak woodlands are the herbaceous plants that grow with the oaks and the abundance of small organisms that supply other food. These habitats also provide animal species with shade in the summer and shelter in the winter, perch sites, and nest and roost cavities and sites. Animal species typically found in oak woodlands include mammals, such as dusky-footed woodrat, mule deer, and western gray squirrel (*Sciurus griseus*), birds such as acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), and western scrub jay (*Aphelocoma californica*), and

amphibians and reptiles, such as California newt (*Taricha torosa*), California slender salamander (*Batrachoseps attenuatus*), ringneck snake (*Diadophis punctatus*), and southern alligator lizard.

Interior Live Oak Woodland. Interior live oak woodland is primarily found intermixed with the coast live oak woodland on the Cornell Farms property, including areas on the proposed winery development site (e.g., at the locations proposed for the rain gardens along the edge of Wappo Road). This alliance includes pure stands dominated by interior live oak. The species composition of the understory vegetation is similar to that found in the coast live oak woodlands and grasslands (see above).

For animal species that typically inhabit oak woodlands, see the coast live oak woodland description above.

Douglas Fir Forest. Douglas fir forest is found throughout the Cornell Farms property, including areas on the proposed winery development site (e.g., at the locations proposed for the wine caves and single-track trail). This alliance includes pure stands and stands mixed with oaks (e.g., coast live oak and black oak [*Quercus kelloggii*]) and other hardwoods (e.g., madrone and California bay). The mixed stands are classified as belonging to the following four associations described in Sawyer et al. (2009): *Pseudotsuga menziesii* -*Quercus agrifolia* Association, *Pseudotsuga menziesii* -*Arbutus menziesii* Association, *Pseudotsuga menziesii* -*Umbellularia californica* Association, and *Pseudotsuga menziesii* -*Quercus kelloggii* Association. When present, the understory vegetation in the Douglas fir forest alliance and associations is similar to that found in the oak woodlands and grasslands (see above).

A high abundance of animal species inhabit coniferous forests. Birds typical of this habitat include species such as golden-crowned kinglet (*Regulus satrapa*), northern spotted owl, and Pacific-slope flycatcher (*Empidonax difficilis*). Deer mouse, dusky-footed woodrat, and shrew-mole (*Neurotrichus gibbsii*) also use these habitats, as well as many species of reptiles and amphibians.

Redwood Forest. On the Cornell Farms property, redwood forest is only found along the lower reach of Drainage A on the Project site (see below). This alliance includes a pure stand of redwoods (*Sequoia sempervirens*) with an understory dominated by Himalayan blackberry (*Rubus armeniacus*).

For animal species that typically inhabit coniferous forest, see the Douglas fir forest description above.

Seasonal and Perennial Waters and Wetlands

As shown in Figure IV.D-1, two ponds and several drainages are found on the Cornell Farms property, but all are located outside the limits of the proposed winery development site. The drainages include a series of ephemeral drainages (i.e., drainages that typically flow only immediately after rainfall events) that drain into two main unnamed drainages (named Drainage A and Drainage B for this EIR) on the property. Flows from Drainage A and Drainage B eventually drain into Mark West Creek, located south of the Cornell Farms property. Neither Drainage A nor Drainage B is identified as a stream on the Calistoga U.S. Geological Survey (USGS) 7.5-minute

quadrangle, whereas, the two ponds (named Pond A and Pond B for this EIR) are identified as perennial ponds. In addition to the ponds and drainages found on the Cornell Farms property, the North Fork of Mark West Creek flows along the northern boundary of the property.

Drainage A originates on the Cornell Farms property as a swale that develops into a well-defined channel directing flows southward towards Mark West Creek. The upper reach of Drainage A (i.e., the reach above Pond A [see below]) is ephemeral and ranges 3 to 6 feet in width and 1 to 3 feet in depth. The channel bed consists primarily of soil with small cobbles, gravels, and fines. Small pool/riffle complexes, meanders, and plunges pools, as well as undercut banks with exposed roots, are found along this reach of the drainage. Wetland vegetation, including species such as narrowleaf cattail (*Typha angustifolia*) and pale spike rush (*Eleocharis macrostachya*), occurs intermittently along the channel, and annual grassland, chamise chaparral, coast live oak woodland, and Douglas fir forest border this reach of the drainage. The lower reach of Drainage A (i.e., the reach below Pond A) is perennial (fed from a subterranean spring in Pond A) and ranges 1 to 3 feet in width and 1 to 2 feet in depth. Similar to the upper reach, wetland vegetation, including species such as common rush (*Juncus effusus*), narrowleaf cattail, and pennyroyal (*Mentha pulegium*), is found intermittently along the lower reach of the Drainage A. Scattered arroyo willow (*Salix lasiolepis*) also occur along this reach, particularly in the vicinity of Pond A. Annual grassland, chamise chaparral, and redwood forest border the lower reach of Drainage A.

Drainage B originates on the Cornell Farms property as several tributary swales that develop into well-defined channels directing flows towards the main stem. The tributary drainages are ephemeral and range between 1 to 5 feet in width and 1 to 4 feet in depth. The channel beds consist primarily of soil with small cobbles, gravels, and fines. Small meanders and plunges pools, as well as undercut banks with exposed roots, are found at a few locations along these tributaries. The tributary drainages do not support any wetland or riparian vegetation. Coast live oak and Douglas fir forest border the tributary drainages. The main stem of Drainage B is intermittent and flows southwest towards the North Fork of Mark West Creek. The drainage ranges between 8 and 12 feet in width and 8 and 15 feet in depth. The channel bed consists of small boulders, large cobbles, gravels, and fines. Pool/riffle complexes, plunge pools, and waterfalls, as well as undercut banks with exposed roots, are found along the main stem. Also, meanders and low flow channels occur at a few locations. Similar to the tributary drainages, the main stem of Drainage B does not support any wetland or riparian vegetation, and coast live oak and Douglas fir forest border the drainage.

Ponds A and B are located in the southern portion of the Cornell Farms property (Pond B is partially on the property). These ponds are man-made with earthen dams and remain ponded year round. Overflow from Pond A flows southward towards Mark West Creek via Drainage A, while overflow from Pond B flows westward towards Drainage B via a tributary drainage. Pond A is the larger of the two ponds, covering roughly 15,000 square feet (0.34 acre). Pond A is estimated to be between 15 and 20 feet deep. Pond B is estimated to be between 8 and 12 feet deep and covers roughly 6,000 square feet (0.14 acre). Discontinuous bands of wetland vegetation are found along the margins of Ponds A and B. The wetland vegetation at Pond A is classified as belonging to the following two alliances described in Sawyer et al. (2009): *Typha angustifolia* Herbaceous Alliance (cattail marshes) and *Eleocharis macrostachya* Herbaceous Alliance (pale spike rush marshes). The

cattail marsh includes pure stands of narrowleaf cattail, while the pale spike rush marsh includes stands with a mix of pale spike rush and other wetland species, such as common rush, Lobb's aquatic buttercup (*Ranunculus lobbii*), and sedges (*Carex* spp.). Scattered arroyo willows are also found in both of these alliances. Although the wetland vegetation found at Pond B is similar to that at Pond A, the stands do not satisfy the criteria for membership in the alliances.⁶

The habitat value of seasonal and perennial waters and wetlands is generally considered to be high, due to the available surface water, abundance of insects, algae, and vascular plant forage, and protective cover of emergent vegetation when present. While such habitats are usually too wet to support mammals, various birds, reptiles, and amphibians are often abundant. Animal species typically found in seasonal and perennial water and wetland habitats include birds, such as great blue heron (*Ardea herodias*), mallard (*Anas platyrhynchos*), marsh wren (*Cistothorus palustris*), and red-winged blackbird (*Agelaius phoeniceus*), reptiles, such as common garter snake (*Thamnophis sirtalis*), and amphibians, such as California newt (*Taricha torosa*), Sierran treefrog, and western toad.

Developed

Developed areas found on the Cornell Farms property include those that are used for agricultural and rural residential purposes. Each of these types of development is described below.

Agricultural. Agricultural areas on the Cornell Farms property are limited to vineyards. The vineyards are located primarily in the northern portion of the property and outside the limits of the proposed winery development site. The vineyards are comprised of single species planted in rows and are supported on metal and wire trellises. Grasses and forbs, such as those found in the grasslands (see above), occur between the rows of vines.

Vineyards provide habitat for a number of insects, reptiles, birds, and small mammals, which in turn serve as prey for predatory birds and mammals. Some of the animal species adapted to this habitat forage here and retreat to the protective cover of the surrounding habitats for shelter and nesting, while other disperse through this habitat.

Rural Residential. Several single-family residences are found on the Cornell Farms property. In general, the areas occupied by the homes and associated infrastructure have been transformed to better meet the needs of the residences and tend to be landscaped with non-native ornamental plants. All of the residences are located outside the limits of the proposed winery development site.

Given the connectivity of the areas occupied by the homes and associated infrastructure with the natural habitats on the Cornell Farms property, many of the animal species using the later habitats likely also forage, nest, roost, and disperse through the rural residential areas.

⁶ For *Typha angustifolia* Herbaceous Alliance, cattail must have at least 50 percent absolute cover in the herbaceous layer. For *Elocharis macrostachya* Herbaceous Alliance, pale spike rush must have at least 30 percent relative cover in the herbaceous layer.

Sensitive Natural Communities

Several of the vegetation communities and associated wildlife habitats found on the Project site are considered sensitive by the CDFG. These are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. Sensitive natural communities found on the Project site include the *Sequoia sempervirens* Forest Alliance (redwood forest) and the *Pseudotsuga menziesii* -*Arbutus menziesii* Association and *Pseudotsuga menziesii* -*Umbellularia californica* Association belonging to the *Pseudotsuga menziesii* Forest Alliance (Douglas fir forest). However, neither of the associations nor the alliance is found within the limits of the proposed winery development site.

In addition to the sensitive natural communities identified above, oak woodlands, wetlands and other waters, and riparian woodlands and forests are considered sensitive by the resource and regulatory agencies (see Regulatory Framework section below). With the exception of riparian woodlands and forests, these communities and habitats are found on the Project site; however, the only one of these communities found within the limits of the proposed winery development site that would be disturbed under the Project is oak woodlands.

Wildlife Movement and Nursery Sites

The Project site and surrounding lands are largely undeveloped, supporting a diverse assemblage of vegetation communities and associated wildlife habitats. In addition, passage onto the Project site by terrestrial wildlife species is generally not restricted by physical barriers. For these reasons, the Project site likely supports dispersal and local movements within home ranges⁷ of wildlife species commonly found in the Project vicinity. Also, because of the proximity of the Maycumas – Mark West corridor, one of the ten major wildlife movement corridors identified in Sonoma County (California Wilderness Coalition, 2001), and undeveloped lands between this corridor and the Project site, the site may support regional movement of wildlife. The Maycumas – Mark West corridor is located a couple of miles west of the Project site and is identified as a landscape linkage⁸ with a medium priority for conservation by the California Wilderness Coalition (2001). This corridor forms a large, intact landscape between roughly Sugarloaf Ridge State Park and Robert Louis Stevenson State Park. The Maycumas – Mark West corridor, together with other protected lands, also connects with wildlife movement corridors in northern Marin and Solano counties.

In addition to facilitating wildlife movement, vegetation communities and associated wildlife habitats found on the Project site likely support breeding sites for wildlife species. However, given that these communities and habitat are generally common throughout the Project vicinity, it is unlikely that breeding sites on the Project site contribute a disproportionate number of juveniles into the adult population (i.e., more young reach adulthood from that area, acre for acre, than from other areas).

⁷ The extent of area with a defined probability of occurrence of an animal during a specific time period.

⁸ Large, regional connections between habitat blocks (“core areas”) meant to facilitate animal movements and other essential flows between difference sections of the landscape.

Special-Status Plant and Animal Species

For the purpose of this EIR, special-status plant and animal species are defined as those species that fall into one or more of the following categories:

1. Officially listed or proposed for listing under the State and/or Federal Endangered Species Acts.
2. State or Federal candidate for possible listing.
3. Species meeting the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA Guidelines.
4. Protected under the Federal Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.
5. Species considered by the CDFG to be a “Species of Special Concern.”
6. Species that are biological rare, very restricted in distribution, declining throughout their range, or have a critical, vulnerable stage in their life cycle that warrants monitoring.
7. Populations in California that may be on the periphery of a species’ range, but are threatened with extirpation in California.
8. Species closely associated with habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, vernal pools, etc.).
9. Species designated as a special-status, sensitive, or declining species by other state, or federal agencies, or non-governmental organizations.

The potential occurrence of special-status plant and animal species on the Project site was initially evaluated by developing a list of special-status species that are known to or have the potential to occur in the Project vicinity. This list was primarily derived from a review of the California Natural Diversity Database (CDFG, 2012), the CNPS Electronic Inventory (CNPS, 2012), and the USFWS lists of federal endangered and threatened species for all or some combination of the following USGS 7.5-minute quadrangles: Aetna Springs, Calistoga, Detert Reservoir, Kenwood, Mark West Springs, Mount St. Helena, Rutherford, St. Helena, and Santa Rosa. Other sources used included existing biological resources reports (Prunuske Chatham, Inc., 2010; Ted Winfield & Associates et al., 2011; Ted Winfield & Associates, 2012), public comment letters (Aquatic Systems Research, 2010; Baye, 2011; Avocet Research Associates, LLC, 2012; Higgins, 2012; State Water Resources Control Board, 2012), and biological literature of the region. The potential for occurrence of those species included on the list were then evaluated based on the habitat requirements of each species relative to the observed existing conditions, and results of previous general and focused habitat assessments and surveys for plants and animal conducted in the summer of 2010 and throughout the winter, spring, and summer of 2011. See **Table IV.D-1** for the specific types of surveys conducted and the survey dates.

**TABLE IV.D-1
SURVEYS CONDUCTED ON THE PROJECT SITE**

Date	Type	Source
June 28, 2010	Vegetation classification and mapping and general habitat assessments and surveys for plants and animals	Prunuske Chatham, Inc. (2010)
January 12, 2011	Habitat assessment for California red-legged frog	Ted Winfield & Associates et al. (2011)
January 12, 2011 February 9, 2011 March 30, 2011 April 14, 2011 April 21, 2011 May 18, 2011 June 9, 2011 June 10, 2011 August 17, 2011 August 30, 2011	Vegetation classification and mapping and focused special-status plant surveys	Ted Winfield & Associates et al. (2011)
April 22, 2011 April 28, 2011 May 12, 2011 May 19, 2011 May 26, 2011 June 2, 2011 July 12, 2011 August 29, 2011	Protocol-level survey for California red-legged frog	Ted Winfield & Associates et al. (2011)
September 4, 2011	Habitat assessment of the north fork of Mark West Creek for amphibians, reptiles and fish	Ted Winfield & Associates et al. (2011)
May 12, 2011 June 2, 2011 August 29, 2011	Habitat assessments and surveys for birds and mammals ¹	Ted Winfield & Associates et al. (2011)
May 18, 2011 May 24, 2011	Protocol-level survey for northern spotted owl	Ted Winfield & Associates et al. (2011)

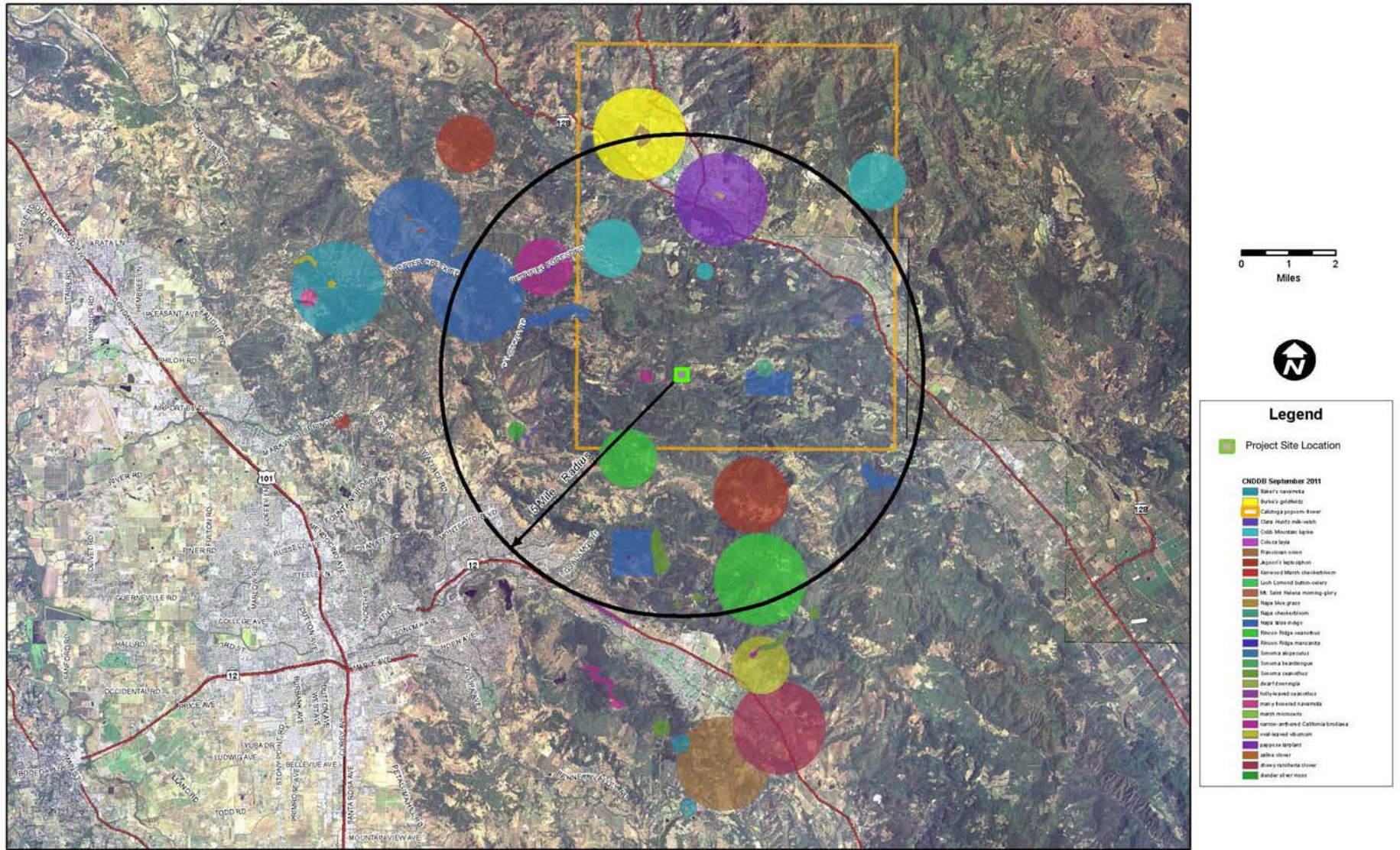
NOTE:

¹ Habitat assessments and surveys for birds and mammals also conducted during protocol-level surveys for California red-legged frog.

Tables BIO-1 and BIO-2 in Appendix BIO present those special-status plant and animal species, respectively, that are known to or have the potential to occur in the Project vicinity, as well as each species' regulatory status, habitat requirements, and ranking of potential for occurrence on the Project site, focusing particularly on the proposed winery development site, and **Figures IV.D-2, IV.D-3, and IV.D-4** illustrate the identity and location of known occurrences of special-status species in the Project vicinity (i.e., within a 5 mile radius of the Project site).

Special-status Plants

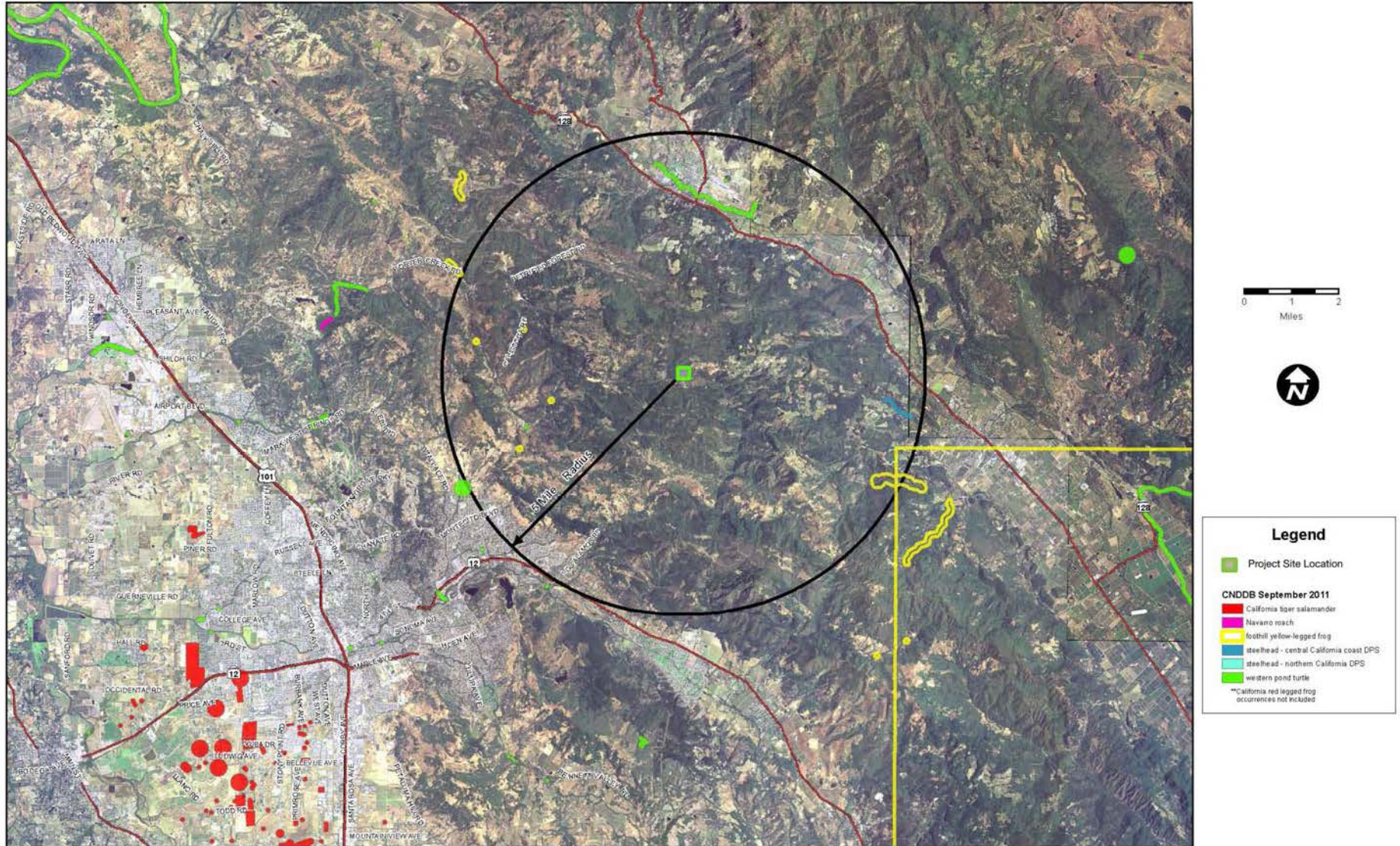
Based on review of the databases and other information sources, 35 special-status plant species have been documented as occurring or potentially occurring in the vicinity of the Project site, and have varying potential for occurrence within the vegetation communities present on the site (Table BIO-1 in Appendix BIO). As indicated in Table IV.D-1, general plant surveys were conducted on the Project site in the summer of 2010, while focused plant surveys were conducted throughout the winter, spring, and summer of 2011. The general plant surveys were conducted by Prunuske Chatham, Inc. staff biologists and consisted of walking transects throughout the



SOURCE: Wiemeyer Ecological Sciences

Henry Cornell Winery . 211996

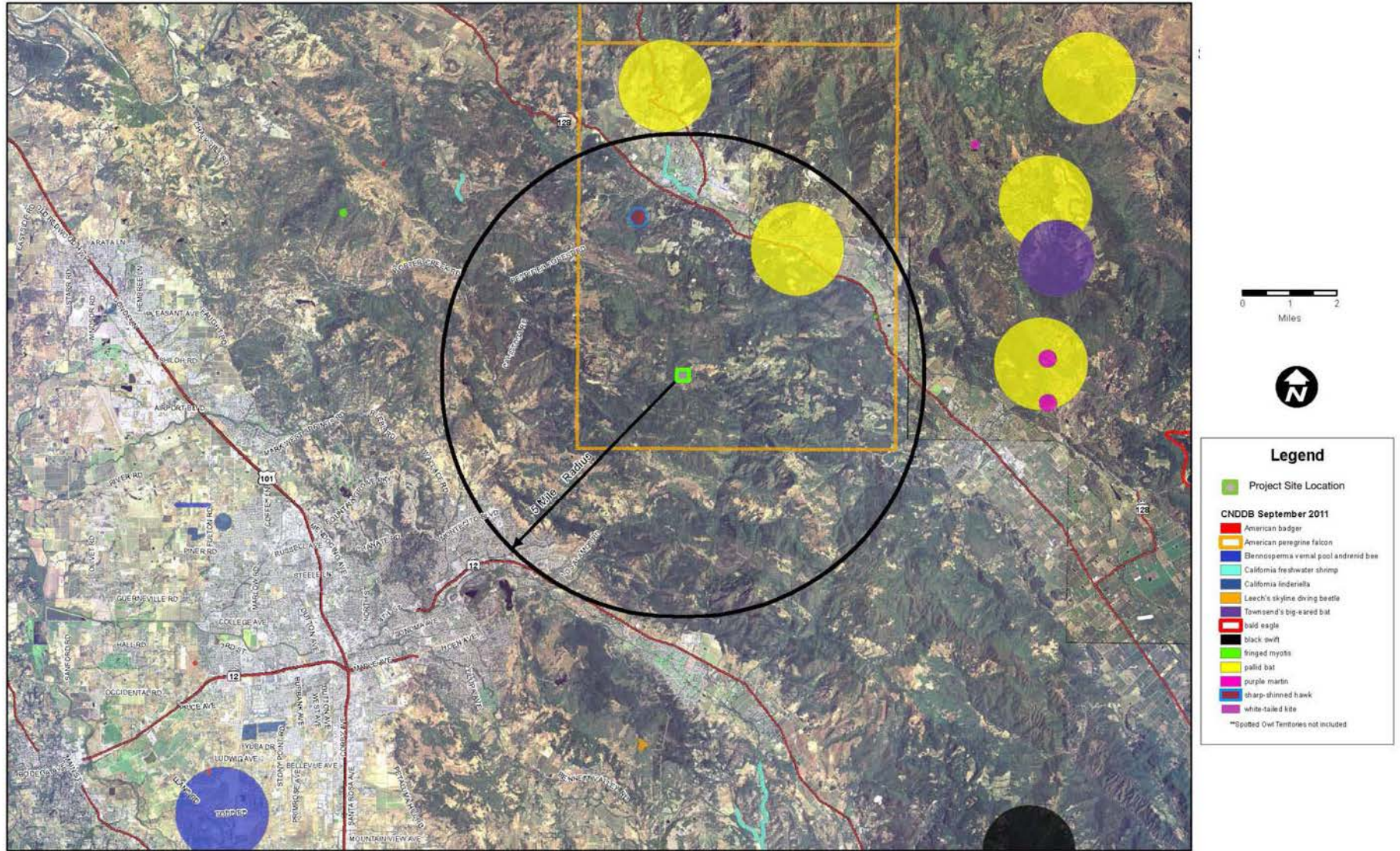
Figure IV.D-2
Special-Status Plant Species in Project Vicinity



SOURCE: Wiemeyer Ecological Sciences

Henry Cornell Winery . 211996

Figure IV.D-3
Special-Status Amphibians, Reptiles, and Fish in Project Vicinity



SOURCE: Wiemeyer Ecological Sciences

Henry Cornell Winery . 211996

Figure IV.D-4

Special-status Invertebrates, Birds, and Mammals in Project Vicinity

proposed winery development site. The focused plant surveys were conducted by Dr. Laurence Stromberg and Dr. Ted Winfield and consisted of walking wandering transects throughout the proposed winery development site and recording each species observed. Any plant that could not be identified to species in the field was collected and keyed in the laboratory. With the exception of narrow-anthered California brodiaea (*Brodiaea californica* var. *leptandra*), none of the special-status plant species were found during these surveys. Because survey results are generally valid for three years (USFWS, 1996), these species are not discussed further in this section. Narrow-anthered California brodiaea is discussed below.

Narrow-anthered California Brodiaea. Narrow-anthered California brodiaea is CNPS List 1B.2 species. This perennial bulbiferous herb is generally found in broadleafed upland forest, chaparral, cismontane coniferous forest, and valley and foothill grasslands on volcanic soils between 360 and 3,000 feet elevation (CNPS, 2012). Several occurrences of this species are recorded in the CNDDDB within 5 miles of the Project site, with the nearest occurrence recorded less than a ½-mile west of the site (CDFG, 2012). This species was also found during recent field surveys on the proposed winery development site. This includes approximately 50 plants adjacent to the location proposed for the parking and landscaping area, 20 plants at the edge of the location proposed for the winery support building, and 70 plants at the location proposed for the water storage tank sites (Prunuske Chatham, Inc., 2010).

Special-status Animals

Based on review of the databases and other information sources, 57 special-status animal species have been documented as occurring or potentially occurring in the vicinity of the Project site, and have varying potential for occurrence within the habitats present on the site (Table BIO-2 in Appendix BIO). Of these animal species, 25 are considered to have at least a moderate to high potential to occur on the Project site, and an additional three species are known to occur on the site. These species, as well as three special-status fish species known to occur in upper Mark West Creek (located south of the Project site), are discussed below. The remaining special-status animal species are not expected to occur on the Project site (species ranked with “no” or “low” potential) for varying reasons, such as the absence of essential habitat requirements for the species, the distance to known occurrences and/or the species distributional range, and/or the limited availability of suitable habitat, and are not discussed further in this section.

Amphibians, Reptiles, and Fish

As indicated in Table IV.D-1, a protocol-level survey for California red-legged frog was conducted in the spring and summer of 2011. This survey was conducted by Dr. Michael Fawcett and Darren Wiemeyer and focused on aquatic habitats on the Project site, following the USFWS survey protocol for the species (USFWS, 2005). During this survey, habitat for the foothill yellow-legged frog (*Rana boylei*) and western pond turtle (*Emys marmorata*) was also assessed. Dr. Fawcett also conducted a habitat assessment of the North Fork of Mark West Creek (located west of the project site) in the summer of 2011 to determine suitability for amphibians, reptiles, and fish, particularly steelhead, and for presence or absence of fish or other animals in any water encountered. While no special-status amphibian, reptile, or fish species were found during these surveys, California red-legged frog, foothill yellow-legged frog, western pond turtle, river

lamprey (*Lampetra ayresii*), central California coast coho salmon (*Oncorhynchus kisutch*), and central California coast steelhead are discussed below.

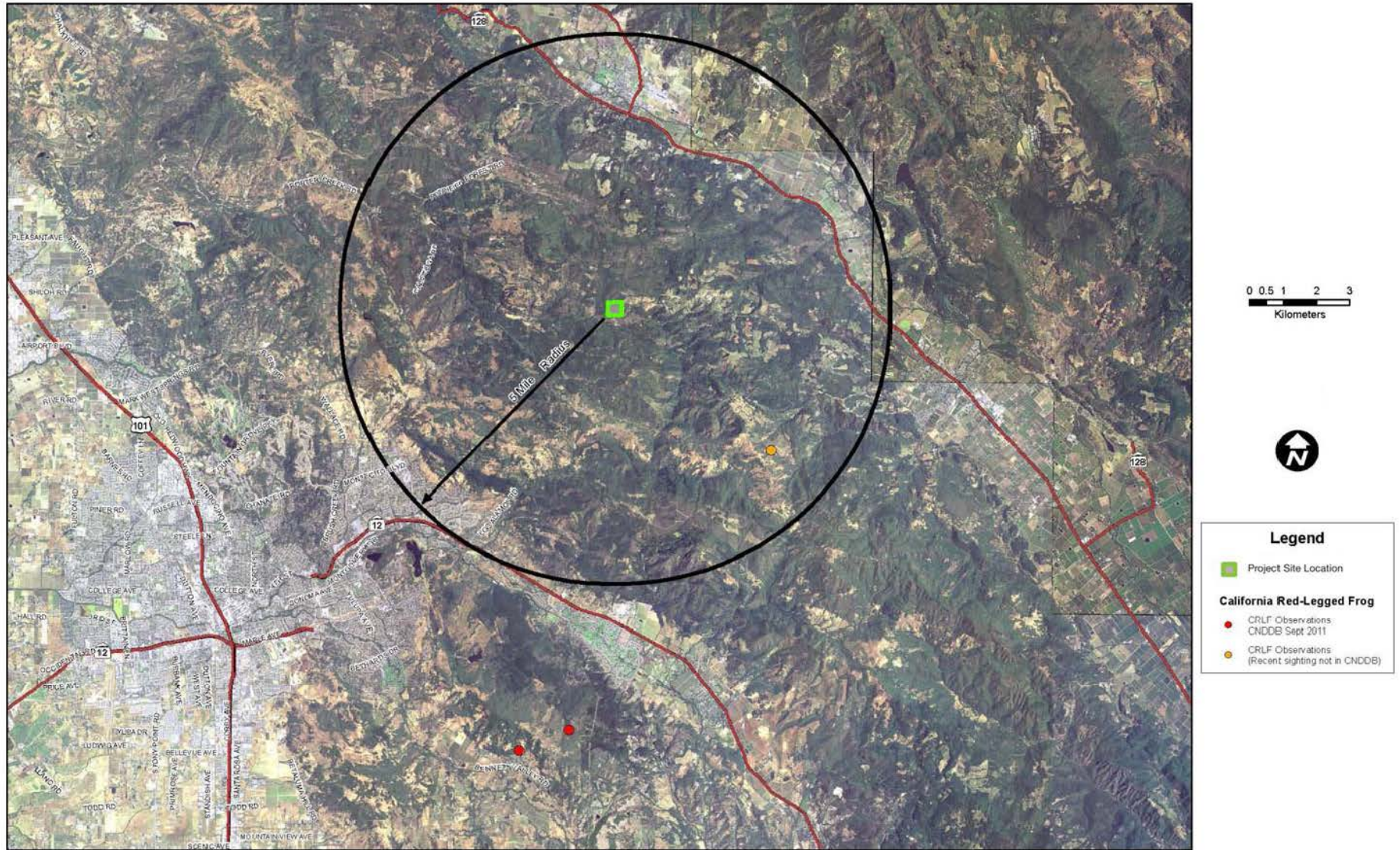
California Red-legged Frog. California red-legged frog (CRLF) is a federally threatened species with revised critical habitat⁹ designated in 2010 (USFWS, 2010a), and is a California Species of Special Concern. CRLFs are usually confined to aquatic habitats such as creeks, streams, and ponds, and occur primarily in areas that have pools about 3 feet deep, with adjacent dense emergent or riparian vegetation (Jennings and Hayes, 1988). Adult frogs move seasonally between their egg-laying sites and foraging habitat, but they rarely move long distances from their aquatic habitat (Bulger et al., 2003). CRLFs breed from November to March. Egg masses are attached to emergent vegetation (Jennings and Hayes, 1994) and hatch within about 2 weeks. Metamorphosis generally occurs between July and September.

Ponds A and B on the Project site support potentially suitable breeding habitat for CRLF, while the adjacent upland areas support potentially suitable foraging, resting, and dispersal habitat. However, no CRLFs were found during the protocol-level survey (Ted Winfield & Associates et al., 2011). The survey was conducted between April and August 2011 in accordance with the *Revised Guidance on Site Assessments and Field Surveys for California Red-legged Frog* (USFWS, 2005), and consisted of three daytime site visits and five nighttime site visits of Ponds A and B, the inlet and outlet drainage channels associated with the ponds, and an approximately ¼-mile reach of Drainage B. Consequently, a total of up to eight site visits were conducted to determine absence of CRLF. Non-native, predatory fish (e.g., largemouth bass [*Micropterus salmoides*], bluegill [*Lepomis macrochirus*], and western mosquitofish [*Gambusia affinis*]) and bullfrogs (*Lithobates catesbeianus*) are known to occur in both ponds (Ted Winfield & Associates et al., 2011). The presence of these species greatly reduces the likelihood that CRLF are present, but undetected by the survey, as these non-native frogs and fish are known to consume eggs, larvae, and small frogs and have been identified as significant contributors to the decline of CRLFs (USFWS, 2002).

Regardless of the negative survey results, the USFWS has indicated that the Project site should be presumed to be occupied by CRLF due to the presence of potentially suitable habitat and a recent observation of the species within 5 miles of the site (USFWS, 2010b; Ted Winfield & Associates et al., 2011; F. Gardipee, USFWS, pers. comm., 2012). This occurrence is not yet recorded in the CNDDB, but was provided during a field meeting with the USFWS in April 2011 (Ted Winfield & Associates et al., 2011). The occurrence is approximately 4 miles southeast of the Project site at the head of a tributary to Sulfur Creek, which is a tributary to the Napa River. The next nearest CRLF occurrences are in the Ledson Marsh area of Annadel State Park in the Sonoma Creek watershed, approximately 8 miles south of the Project site (**Figure IV.D-5**) (CDFG, 2012). The only occurrences in the Mark West Creek watershed are even further away (CDFG, 2012).

⁹ Critical habitat is defined in section 3(5)(A) of the federal Endangered Species Act (16 USC 1532) as:

- (i) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
- (ii) Specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.



The Project site is not located within designated critical habitat for this species.

Foothill Yellow-legged Frog. Foothill yellow-legged frog (FYLF) is a California Species of Special Concern. FYLFs require shallow, flowing water in small to moderate-sized streams, with at least some cobble-sized substrate, which is used for oviposition (Jennings and Hayes, 1994). Egg masses are attached to rocks at the water surface along edges of pools and riffles between late March and early June (Jennings and Hayes, 1994; Stebbins, 2003). FYLFs require at least 15 weeks of water for successful metamorphosis, which typically occurs between July and September.

Drainage B on the Project site supports potentially suitable habitat for FYLF. Mark West Creek, and possibly the North Fork of Mark West Creek, also support potentially suitable habitat for the species. Several occurrences of FYLF are recorded in the CNDDDB within 5 miles of the Project site, with the nearest occurrence nearly 3 miles west of the site in Mark West Creek (CDFG, 2012). This species was not found on the Project site during the protocol-level survey for CRLF or during the various other field surveys and potentially suitable habitat for FYLF is not present on the proposed winery development site.

Western Pond Turtle. Western pond turtle (WPT) is a California Species of Special Concern and is associated with a variety of permanent and intermittent aquatic habitats, such as rivers, creeks, small lakes and ponds, marshes, irrigation ditches, and reservoirs. While WPTs spend much of their lives in water, they require terrestrial habitats for nesting, which generally occurs between late April and early August (Jennings and Hayes, 1994). They also may overwinter on land and may spend part of the warmest months in aestivation on land. Use of terrestrial habitats for overwintering and aestivation may vary considerably with latitude and habitat type, as some turtles do not leave aquatic habitat (Stebbins, 2003).

Ponds A and B on the Project site and the adjacent upland areas support potentially suitable habitat for WPT. However, no WPTs were found on the site during the protocol-level survey for CRLF or during the various other field surveys. The CRLF survey, as well as the majority of the other field surveys were conducted between April and August, a period of peak activity for WPTs. Both ponds are known to support predatory fish and frogs, which would reduce survivorship of turtle hatchlings after moving from nest sites to the water. While WPTs have apparently not colonized habitats on the Project site, there are several occurrences of the species recorded in the CNDDDB within 5 miles of the site, including occurrences in Mark West Creek (CDFG, 2012).

River Lamprey. River lamprey is a California Species of Special Concern and is anadromous.¹⁰ River lampreys spend about 3 to 4 months at sea before returning to freshwater to spawn during the winter and spring (Moyle, 2002). Young river lampreys, called ammocoetes, emerge from the buried nest after approximately 3 weeks and drift downstream to suitable rearing habitat consisting of back water areas with soft mud/sand substrates. Ammocoetes burrow tail first into the soft substrate, where they spend several years feeding on detritus. Ammocoetes pass through a

¹⁰ Anadromous species are those that migrate as juveniles from freshwater to the sea, and return to spawn in freshwater.

transformation process similar to the smolting phases¹¹ in salmonids. The newly transformed ammocoetes, called marcopthalmia, develop eyes and functioning mouthparts and migrate to the ocean where they take up a predaceous feeding lifestyle.

The Project site does not support potentially suitable habitat for river lamprey. However, lampreys have been collected in Mark West Creek near the Humbug Creek confluence (Fawcett et al., 2003), located roughly 5 miles downstream of the site.

Central California Coast Coho Salmon. Central California Coast coho salmon is a federally and state listed endangered species with a final critical habitat designated in 1999 (NMFS, 1999). Critical habitat includes all accessible river reaches within the listed range of the species, including Mark West Creek. There is little historical documentation regarding the distribution and abundance of coho salmon in the Russian River (SCWA, 2010). However, an early estimate put the coho salmon population at 5,000 fish, which utilized the tributaries near Duncans Mills (SCWA, 2008). Although there are no current estimates of coho salmon in the Russian River, recent juvenile surveys indicate that the wild coho population has been reduced to very low levels and are only known to persist in a few creeks. In an attempt to recover the Russian River run, the Coho Salmon Broodstock Program was initiated. The program propagates local coho at the Don Clausen Fish Hatchery and releases young into several Russian River tributaries with historic occurrences of coho.

Coho salmon is an anadromous species with a 3-year life cycle. Adults spend approximately 2 years at sea before migrating in late-fall and winter (generally mid-November through mid-January) to their natal stream to spawn. Spawning mainly occurs in streams that flow directly into the ocean or are tributaries to large rivers (Moyle, 2002). Females typically choose a spawning site near the head of a riffle, just below pool, where water changes from smooth to turbulent flow and there is abundant medium to small gravel. Each female builds a succession of nesting gravels or “redds” in the same place, moving upstream as she does so and depositing a few hundred eggs in each. A dominant male accompanies a female during spawning, and one or more subordinate male may also engage in spawning (Moyle, 2002). Spawning takes about a week to complete and once completed adults die within a few days or weeks. Embryos hatch after 8 to 12 weeks of incubation and hatchlings remain in the gravel until their yolk sacs have been absorbed (typically 4 to 10 weeks after hatching). Young spend their first year rearing in streams with deep pools and submerged large woody cover. Out migration occurs in spring usually before June to avoid warmer summer temperatures. Smolts may acclimate to seawater in estuaries before entering the ocean. Coho salmon are the most temperature sensitive of the salmonids in the Russian River watershed and require permanent cool clean water for rearing young. Optimal juvenile habitat for growth is characterized by temperatures of 12-14°C. Coho do not persist in streams where summer temperatures reach 22-25°C for extended periods of time or where there are high fluctuations in temperature at the upper end of their tolerance range (Moyle, 2002). Additionally, although coho typically rear in clear streams, some juveniles rear in the freshwater portions of estuaries and lagoons rather than streams (Moyle, 2002), but summer lagoon rearing

¹¹ Physiological process that allows species to adapt from a freshwater environment to a marine environment.

appears to be rare among coho salmon along the central California coast, probably due to the lower tolerance of the species to high water temperatures compared to steelhead.

The Project site does not support potentially suitable habitat for coho salmon. However, spawning and rearing habitat for coho salmon occurs in Mark West Creek (Fawcett et al., 1996; Fawcett et al., 2003). Also, as part of the Coho Salmon Broodstock Program, coho were released into Mark West Creek for the first time in 2010, and juvenile coho were recently (August 2011) found during fish surveys in Porter Creek, a tributary to Mark West Creek (M. Obedzinski, U.C.C.E., pers. comm., *cited in* Ted Winfield & Associates et al., 2011). Although the North Fork of Mark West Creek may have historically supported spawning and rearing habitat for coho salmon (CDFG, 2008), this tributary is not expected to currently support habitat for coho salmon given the poor habitat conditions observed during field surveys (Ted Winfield & Associates et al., 2011). In addition, the culvert at the St. Helena Road crossing is considered a partial barrier¹² to the upstream migration of salmonids (Ted Winfield & Associates et al., 2011; CalFish, 2012a), and a few hundred feet beyond the crossing the steepness of the North Fork's channel is identified as a total barrier¹³ (CalFish, 2012b).

Central California Coast Steelhead. Central California coast steelhead is a federally threatened species with a final critical habitat designated in 2005 (NMFS, 2005). The Russian River once supported the third most productive watershed for steelhead in California (Moyle, 2002). Although steelhead have declined, wild steelhead continue to occur throughout most of the Russian River basin and spawn in the upper mainstem and numerous tributaries. Hatchery steelhead raised at the Don Clausen Fish Hatchery are stocked in the Russian River and tributaries to mitigate for the loss of habitat upstream of Lake Sonoma and Lake Mendocino.

Steelhead/rainbow trout are adapted to a variety of habitats and show considerable flexibility in life history patterns. Fish that spend their adult life in the ocean and migrate to freshwater streams to spawn (i.e., anadromous) are called steelhead, while fish that spend their entire life cycle in freshwater streams (i.e., resident fish) are called rainbow trout. Steelhead in the ocean take advantage of the abundance of food and can grow up to 70 cm in length. Rainbow trout have limited food resources and reach maturity at much smaller sizes. Adult steelhead migrate from the ocean during winter (generally during the period of December through March) to natal freshwater streams where they spawn. As in most other salmonids, females dig a redd in the coarse gravel of the tail of a pool or in a riffle, and deposit several hundred eggs. After spawning steelhead move gradually downstream and hold in pools for periods of time during the downstream migration. Adults may spawn up to 4 times in their life. Eggs hatch within 3 to 4 weeks, and young juveniles or "fry" emerge from the gravel 2 to 3 weeks later and begin actively feeding (often in schools) in low velocity areas in waters 3 to 14 deep along stream margins. Streambank vegetation and cover are essential for their survival. As young juvenile feed and grow, they gradually move to faster and deeper water (ranging from 10 to 20 inches), schools break-up and individual steelhead establish territories. (Barnhart 1986, Busby et al. 1996). Most steelhead in their first year of life occupy riffles when there is adequate water, although some larger steelhead inhabit pools or deeper faster runs (Barnhart 1986). Juveniles typically rear from one or two years (ranging

¹² Defined as an impassible feature to some fish during part or all life stages at all flows.

¹³ Defined as an impassible feature to all fish at all flows.

between one to four years), and then become “smolts” and migrate to the ocean from November through May with peaks in March, April, and May.

The Project site does not support potentially suitable habitat for steelhead. However, spawning and rearing of steelhead occurs throughout Mark West Creek (Fawcett et al., 1996; SCWA, 2002; Fawcett et al., 2003), and Mark West Creek downstream of impassable barriers is included in the final ruling on critical habitat for this species. In August 2011, as part of a fish survey, CDFG personnel observed yearling, young of the year, and juvenile steelhead in Mark West Creek downstream of the Project site (Higgins, 2012). In the survey, CDFG personnel also found yearling and young of the year steelhead stranded in pools in the section of North Fork below St. Helena Road of what appeared to be “...rapidly decreasing water levels” (Higgins, 2012; SWRCB, 2012). The North Fork of Mark West Creek is not expected to currently support suitable spawning or rearing habitat for steelhead given the poor habitat conditions observed during field surveys, as well as the partial barrier to upstream migration posed by the culvert at the St. Helena Road crossing (Ted Winfield & Associates et al., 2011; CalFish, 2012a) and the total barrier posed by the channel steepness a few hundred feet beyond the culvert crossing (CalFish, 2012b), but historically steelhead have occupied this tributary (Aquatic Systems Research, 2010; CDFG, 2008).

Birds

Field surveys to assess habitat and to identify birds on the proposed winery development site were conducted in the spring and summer of 2011 (Table IV.D-1). These surveys were conducted by Darren Wiemeyer and consisted of detailed searches of habitats on the proposed winery development site and within a 50-foot buffer for songbirds and a 300-foot buffer for birds-of-prey (with the exception of northern spotted owl [see below]) to determine suitability for special-status bird species and presence or absence of nesting birds. Also, habitats were assessed and bird species present within these habitats were noted during daytime site visits for the protocol-level survey for CRLF in the vicinity of Ponds A and B and the downstream reaches of Drainages A and B.

While no birds were found actively nesting during field surveys, the Project site supports potentially suitable nesting habitat, and there is potential for birds to establish nests on and in the vicinity of the proposed winery development site. Special-status bird species with at least a moderate to high potential to nest on the Project site includes such species as Cooper’s hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), grasshopper sparrow (*Ammodramus savannarum*), Bell’s sage sparrow (*Amphispiza belli belli*), great egret (*Ardea alba*), great blue heron, long-eared owl (*Asio otus*), oak titmouse (*Baeolophus inornatus*), Vaux’s swift (*Chaetura vauxi*), olive-sided flycatcher (*Contopus cooperi*), snowy egret (*Egretta thula*), white-tailed kite (*Elanus leucurus*), Nuttall’s woodpecker (*Picoides nuttallii*), purple martin (*Progne subis*), and Allen’s hummingbird (*Selasphorus sasin*) (see Table BIO-2 in Appendix BIO). Other bird species, such as red-tailed hawk, red-shouldered hawk (*Buteo lineatus*), and California thrasher (*Toxostoma redivivum*), which are protected under the federal Migratory Bird Treaty Act and Section 3503.5 of the California Fish and Game Code (see Regulatory Framework section below), also have the potential to nest on the Project site. Additionally, there remains potential for

occasional use of the site by other special-status bird species, such as golden eagle, ferruginous hawk (*Buteo regalis*), and American peregrine falcon (*Falco peregrines anatum*) (see Table BIO-2). Use of the Project site would be limited to occasional wintering or foraging activities by species for which essential breeding habitat is absent from the site.

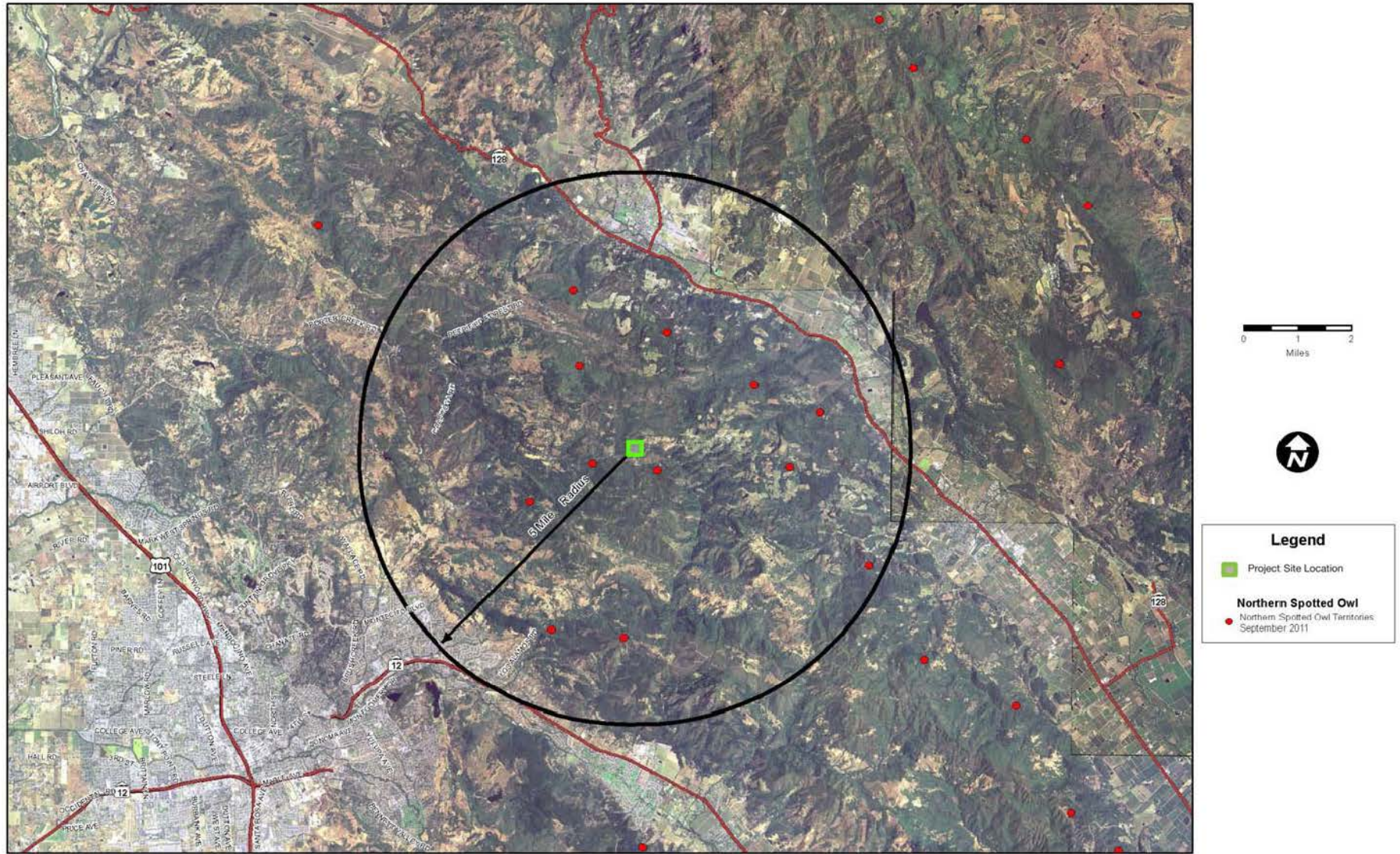
In addition to the bird habitat assessments and surveys discussed above, Darren Wiemeyer conducted a protocol-level survey for northern spotted owl (NSO). This survey was conducted in May 2011 (see Table IV.D-1) in accordance with *Protocol for Surveying Proposed Management Activities that may Impact Northern Spotted Owl* (USFWS, 1992), and consisted of two dusk site visits at calling stations established on the Project site to adequately cover the Cornell Farms property and the vicinity. A complete 1-year survey (i.e., 6 visits) was not conducted following guidance from the USFWS that additional visits were not necessary, as known territories would still be considered occupied (T. Winfield, Ph.D., pers. comm., 2012); no NSO were detected on the Project site, but were heard on more than one occasion from two known territories (Ted Winfield & Associates et al., 2011). This species is discussed below.

Northern Spotted Owl. NSO is one of three subspecies of spotted owls currently recognized, listed as a federally threatened species and a California Species of Species Concern. Critical habitat for NSO was originally designated in 1992 (USFWS, 1992). This designation was revised in 2008 (USFWS, 2008), and is currently being revised again (USFWS, 2012b).

NSOs generally inhabit older forested habitats because they contain the structural characteristics required for nesting, roosting, and foraging. Specifically, NSO require a multi-layered, multi-species canopy with moderate to high canopy closure (USFWS, 2012b). Stands typically contain a high incidence of trees with large cavities and other types of deformities; large snags; an abundance of large, dead wood on the ground; and open space within and below the upper canopy for spotted owls to fly. NSOs are highly territorial and non-migratory, remaining on their home range throughout the year. Home range size varies, but generally increases from south to north (USFWS, 2012b).

NSO is a relatively long-lived bird; produces few, but large young; invests significantly in parental care; experiences later or delayed maturity; and exhibits high adult survivorship (USFWS, 2012b). The breeding season usually extends from February or March, when courtship begins, to July, when young leave the nests.

The upland forest habitats on the Project site support potentially suitable nesting, roosting, and foraging habitat for NSO, and the upland woodland habitats support potentially suitable foraging habitat. While no NSO were detected on the Project site during the protocol-level survey, NSOs were heard calling from two known territories in the Project vicinity (Ted Winfield & Associates et al., 2011). There are 12 known NSO territories recorded with 5 miles of the Project site (**Figure IV.D-6**) (CDFG, 2012). Of these occurrences, two are located within 1.3 miles (6,864 feet) of the proposed winery development site, one of which is within ½ mile (2,640 feet). NSOs were heard during the second of the two site visits from these known territories. Response calls were all 4-note calls (no agitated calls or extended hoot calls were heard) and it sounded like calls from each NSO were from the same position (Ted Winfield & Associates et al., 2011). Also,



SOURCE: Wiemeyer Ecological Sciences

Henry Cornell Winery . 211996

Figure IV.D-6

Northern Spotted Owl Territories in Project Vicinity

NSOs were heard calling during one nighttime site visit for the protocol-level survey for CRFL (May 12, 2011) and before the onset of first NSO site visit (May 18, 2011). All calls previous to the protocol-level survey for NSO were from the same location of those calls heard during the NSO site visits. Based on survey results, NSO still occupy the two known territories within 1.3 miles of the Project site (one located approximately 1,900 feet from the Project site and the other located approximately 4,200 feet), and no new territories have been established in the Project vicinity.

The Project site is located within the proposed revised critical habitat Unit 11 – Interior California Coast, Subunit – IIC-6 and, therefore, has been designated by the USFWS as an area essential to the survival and recovery of NSO.

Mammals

Field surveys to assess habitat and to identify mammals on the proposed winery development site were conducted in the spring and summer of 2011 (Table IV.D-1). These surveys were conducted by Darren Wiemeyer and consisted of detailed searches of habitats on the proposed winery development site to determine suitability for special-status mammal species. Also, habitats were assessed and mammals present within these habitats were noted during daytime site visits for the protocol-level survey for CRLF in the vicinity of Ponds A and B and the downstream reaches of Drainages A and B. While few mammals were observed during these surveys, potentially suitable habitat for a number of special-status bat species is present on the Project site. These species are further discussed below.

Bats. The Project site supports potentially suitable habitat for a number of special-status bat species, including pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysandodes*), long-legged myotis (*Myotis volans*), and Yuma myotis (*Myotis yumanensis*). However, the absence of caves, mines, rocky outcrops and cliffs, and various types man-made structures on the proposed winery development site limits habitat suitability for those bat species that prefer roosting in such habitats (e.g., Townsend's big-eared bat, fringed myotis, and Yuma myotis). The trees on the proposed winery development site support potentially suitable day, night, and maturity roosting habitat for those bat species that utilize trees for roosting sites (e.g., pallid bat, silver-haired bat, hoary bat, long-eared myotis, and long-legged myotis). In addition to potentially suitable roosting habitat, the Project site and the proposed winery development site support potentially suitable foraging habitat. Bats were observed at dusk on several occasions during the nighttime site visits for the protocol-level CRLF survey on the proposed winery development site and at Pond A (Ted Winfield & Associates et al., 2011). However, identification to species was not possible.

Regulatory Framework

The following discussion identifies federal, state, and local regulations that serve to protect sensitive biological resources relevant to the CEQA review process.

Federal Regulations

Federal Endangered Species Act

The Secretary of the Interior (represented by the USFWS) and the Secretary of Commerce (represented by the NMFS) have joint authority to list a species as threatened or endangered under the Federal Endangered Species Act (FESA) (United States Code [USC], Title 16, Section 1533[c]). FESA prohibits the “take” of endangered or threatened fish, wildlife, or plants species in areas under federal jurisdiction or in violation of state law, in addition to adverse modifications to their critical habitat. Under FESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The USFWS and NMFS also interpret the definition of “harm” to include significant habitat modification that could result in the take of a species.

If an activity would result in the take of a federally listed species, one of the following is required: an incidental take permit under Section 10(a) of FESA, or an incidental take statement issued pursuant to federal interagency consultation under Section 7 of FESA. Such authorization typically requires various measures to avoid and minimize species take, and to protect the species and avoid jeopardy to the species’ continued existence.

Pursuant to the requirements of Section 7 of FESA, a federal agency reviewing a proposed project which it may authorize, fund, or carry out must determine whether any federally listed threatened or endangered species, or species proposed for federal listing, may be present on the project site and determine whether implementation of the proposed project is likely to affect the species. In addition, the federal agency is required to determine whether a proposed project is likely to jeopardize the continued existence of a listed species or any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed or designated for such species (16 USC 1536[3], [4]).

Generally, the USFWS implements FESA for terrestrial and freshwater fish species and the NMFS implements FESA for marine and anadromous fish species. USFWS and/or NMFS must authorize projects where a federally listed species is present and likely to be affected by an existing or proposed project. Authorization may involve a letter of concurrence that the project will not result in the potential take of a listed species, or may result in the issuance of a Biological Opinion that describes measures that must be undertaken to minimize the likelihood of an incidental take of a listed species. A project that is determined by USFWS or NMFS to jeopardize the continued existence of a listed species cannot be approved under a Biological Opinion.

Where a federal agency is not authorizing, funding, or carrying out a project, take that is incidental to the lawful operation of a project may be permitted pursuant to Section 10(a) of FESA through approval of a habitat conservation plan (HCP).

FESA requires the federal government to designate “critical habitat” for any species it lists under the Endangered Species Act. “Critical habitat” is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to the species conservation, and those features that may require

special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the regulatory agency determines that the area itself is essential for conservation.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) (16 USC, Section 703, Supp. I, 1989), as amended by the Migratory Bird Treaty Reform Act, prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. The act addresses whole birds, parts of birds, and bird nests and eggs. For projects that would not cause direct mortality of birds, the MBTA is generally interpreted for the purposes of CEQA analyses as protecting active nests of all species of birds that are included in the “List of Migratory Birds” published in the Federal Register in 1995 and as amended in 2005. Though the MBTA allows permits to be issued for import and export, banding, scientific collecting, taxidermy, and rehabilitation, among other reasons, there is no provision in the MBTA that allows for species take related to development projects (Code of Federal Regulations, Title 50: Wildlife and fisheries Part 21; Migratory Bird Permits).

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.”

Rivers and Harbors Act and Clean Water Act

The Secretary of the Army (represented by the Corps of Engineers [USACE]) has permitting authority over activities affecting waters of the United States under Section 10 of the Rivers and Harbors Act (33 USC 403) and Section 404 of the Clean Water (33 USC 1344). Waters of the United States are defined in Title 33 CFR Part 328.3(a) and include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. Section 10 of the Rivers and Harbors Act requires a federal license or permit prior to accomplishing any work in, over, or under navigable¹⁴ waters of the United States, or which affects the course, location, condition or capacity of such waters. Section 404 of the Clean Water Act requires a federal license or permit prior to discharging dredged or fill material into waters of the United States, unless the activity is exempt (33 CFR 324.4) from Section 404 permit requirements (e.g., certain farming and forestry activities). To obtain a federal license or permit, project proponents must demonstrate that they have attempted to avoid the resource or minimize impacts on the resource; however, if it is not

¹⁴ “Navigable waters of the United States” (33 CFR Part 329) are defined as water that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation.

possible to avoid impacts or minimize impacts further, the project proponent is required to mitigate remaining project impacts on all federally-regulated waters of the United States.

Section 401 of the Act (33 USC 1341) requires any project proponents for a federal license or permit to conduct any activity including, but not limited to, the creation or operation of facilities, which may result in any discharge into navigable waters of the United States to obtain a certification from the state in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or would originate, that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the creation of any facility must also pertain to the subsequent operation of the facility. The responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and its 9 Regional Water Quality Control Boards (RWQCBs).

State Regulations

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA) and Section 2081 of the California Fish and Game Code, a permit from the CDFG is required for activities that could result in the take of a state-listed threatened or endangered species (i.e., species listed under CESA). The definition of “take” is to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish and Game Code Section 86).

Unlike the federal definition of “take,” the state definition does not include “harm” or “harass”. As a result, the threshold for take under CESA is typically higher than that under FESA. Section 2080 of the Fish and Game Code prohibits the taking of plants and animals listed under the authority of CESA, except as otherwise permitted under Fish and Game Code Sections 2080.1, 2081, and 2835. Under CESA, the California Fish and Game Commission retains a list of threatened species and endangered species (Fish and Game Code Section 2070). The California Fish and Game Commission also maintains two additional lists:

1. Candidate species (CDFG has issued a formal notice that the species is under review for addition to either the list of endangered species or the list of threatened species)
2. Species of special concern (which serves as a watch list)

A lead agency reviewing a proposed project within its jurisdiction must determine whether any state-listed threatened or endangered species may be present in a project area and determine whether the proposed project may take a listed species, consistent with the requirements of CESA. If a take would occur, an incidental take permit would be required from the CDFG, including a mitigation plan that provides measures to minimize and fully mitigate the impacts of the take. The measures must be roughly proportional in extent to the impact of the taking and must be capable of successful implementation. Issuance of an incidental take permit may not jeopardize the continued existence of a state-listed species. For species that are also listed as

threatened or endangered under the FESA, CDFG may rely on a federal incidental take statement or incidental take permit to authorize an incidental take under CESA.

California Fully Protected Species and Species of Special Concern

The classification of “fully protected” was the CDFG’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The California Fish and Game Code sections (fish at Section 5515, amphibian and reptiles at Section 5050, birds at Section 3511, and mammals at Section 4700) dealing with “fully protected” species states that these species “...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species,” although take may be authorized for necessary scientific research. This language makes the “fully protected” designation the strongest and most restrictive regarding the “take” of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFG to authorize take resulting from recovery activities for state-listed species.

Species of Special Concern are broadly defined as animals not listed under the FESA or CESA, but which are nonetheless of concern to the CDFG because are declining at a rate that could result in listing or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFG, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA during project review.

California Department of Fish and Game Code Section 3503

Independent of the MBTA, birds of prey are protected in California under the Fish and Game Code (Section 3503.5, 1992). Section 3503.5 states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes (diurnal birds of prey) or Strigiformes (owls) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. The CDFG considers any disturbance that causes nest abandonment and/or loss of reproductive effort to be “taking.”

California Native Plant Protection Act

The California Native Plant Protection Act (California Fish and Game Code Sections 1900-1913) and the Natural Communities Conservation Planning Act provide guidance on the preservation of plant resources; these two acts underlie the language and intent of Section 15380(d) of the CEQA Guidelines. Vascular plants listed as rare or endangered by the CNPS (2012), but which have no

designated status or protection under state or federal endangered species legislation, are defined as follows:

1. List 1A: Plants presumed extinct
2. List 1B: Plants rare, threatened, or endangered in California and elsewhere
3. List 2: Plants rare, threatened, or endangered in California, but more numerous elsewhere
4. List 3: Plants about which more information is needed – a review list
5. List 4: Plants of limited distribution – a watch list

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria for endangered, threatened, or rare as laid out in Section 15380 of the CEQA Guidelines. Additionally, plants listed on CNPS List 1A, 1B, or 2 also meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA) of the California Fish and Game Code.

California Department of Fish and Game Code Sections 1600-1616

Streams, lakes, and riparian vegetation as habitat for fish and other wildlife species, are subject to jurisdiction by the CDFG under Sections 1600-1616 of the California Fish and Game Code. Any activity that would do one or more of the following: (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 generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream,” which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Riparian is defined as “on, or pertaining to, the banks of a stream;” therefore, riparian vegetation is defined as, “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself”. Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from the CDFG.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) was created by the legislature in 1967. The mission of the SWRCB is to ensure the highest reasonable quality for waters of the State while at the same time allocating those waters to achieve the optimum balance of beneficial uses. Waters of the state are defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The SWRCB protects all waters in its regulatory scope, but has special responsibility for isolated wetlands and headwaters. These waterbodies have high resource value, are vulnerable to filling, and may not be regulated by other

programs, such as Section 404 of the Clean Water Act. Waters of the State are regulated by the Water Boards under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to impact waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to waters of the State, the Water Boards have the option to regulate such activities under its State authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

California Public Resources Code §21083.4

Under California Public Resources Code Section §21083.4, a County shall determine whether a project within its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment. If a significant effect is determined, the following mitigation alternatives are given:

1. Conserving oak woodlands through the use of conservation easements.
2. Plant an appropriate number of trees, including maintaining the plantings and replacing dead or diseased trees; required maintenance of trees terminates seven years after the trees are planted; this type of mitigation should not fulfill more than half of the mitigation requirement for the project; this type of mitigation may also be used to restore former oak woodlands.
3. Contribute funds to the Oak Woodlands Conservation Fund.
4. Other mitigation measures developed by the County.

Local

Sonoma County General Plan 2020

The Sonoma County General Plan 2020 (GP 2020) establishes policies to guide decisions on future growth, development, and conservation of resources through 2020 in a manner consistent with the goals and quality of life desired by the County's residents. The following goals, objectives, and policies for protecting biological resources defined within the Open Space and Resource Conservation Element of the GP 2020 are applicable to the proposed Project:

Biotic Habitat Areas

Goal OSRC-7: Protect and enhance the County's natural habitats and diverse plant and animal communities.

Objective OSRC-7-1: Identify and protect native vegetation and wildlife, particularly occurrences of special status species, wetlands, sensitive natural communities, woodlands, and areas of essential habitat connectivity.

Objective OSRC-7.3: Establish development guidelines to protect designated Biotic Habitat Areas and assure that the quality of these natural resources is maintained.

Objective OSRC-7.4: Where appropriate, support regulatory efforts by other agencies to protect biotic habitat.

Objective OSRC-7.5: Maintain connectivity between natural habitat areas.

Objective OSRC-7.6: Establish standards and programs to protect native trees and plant communities.

Objective OSRC-7.8: Encourage voluntary efforts to restore and enhance biotic habitat.

Policy OSRC-7b: Rezone to the Biotic Resources combining district all lands designated as Biotic Habitat Areas. Prepare and adopt an ordinance that provides for protection of designated Biotic Habitat Areas in conformance with the following principles. Until the ordinance is adopted, require that land use and development in designated areas comply with these principles:

- (1) For discretionary projects, notify applicants of protected habitats and species and possible requirements of Federal and State regulatory agencies, request identification of known protected habitats and species, and:
 - (a) In designated Biotic Habitat Areas, require site assessment and adequate mitigation. The priorities for adequate mitigation are, in order of highest to lowest priority:
 - i. Avoid the habitat.
 - ii. Mitigate on site to achieve no net loss.
 - iii. Mitigate off site to achieve no net loss.
 - iv. Create replacement habitat off site to achieve no net loss.To the extent feasible, the mitigation required by the County should be consistent with permit requirements of Federal and State regulatory agencies.
 - (b) In designated Marshes and Wetlands, require a setback of 100 feet from the delineated edges of wetlands. The setback may be reduced based upon site assessment and appropriate mitigation.
 - (c) In designated Habitat Connectivity Corridors, encourage property owners to consult with CDFG, install wildlife friendly fencing, and provide for roadway undercrossings and oversized culverts and bridges to allow movement of terrestrial wildlife.
 - (d) The acreage required for adequate mitigation and replacement habitat shall be at least two times the acreage affected unless a lower level is acceptable to the applicable State and Federal agencies, with the amount depending on the habitat affected and the applicable mitigation priority value.
- (2) For discretionary projects in all designated Biotic Habitat Areas, send referrals to appropriate regulatory agencies and, where such agencies' comments or other agency information indicates biotic resources could be adversely affected, require site assessment, compliance with agency requirements and adequate mitigation pursuant to the priorities in (1) (a).*

Policy OSRC-7k: Require the identification, preservation and protection of native trees and woodlands in the design of discretionary projects, and, to the maximum extent practicable, minimize the removal of native trees and fragmentation of woodlands, require any trees

removed to be replaced, preferably on the site, and provide permanent protection of other existing woodlands where replacement planting does not provide adequate mitigation.

Policy OSRC-7l: Identify important oak woodlands, assess current protection, identify options to provide greater protection of oak woodlands and their role in connectivity, water quality and scenic resources, and develop recommendations for regulatory protection and voluntary programs to protect and enhance oak woodlands through education, technical assistance, easements and incentives.*

Policy OSRC-7n: Encourage landowners to voluntarily participate in a program that protects officially designated individual trees or groves that either have historical interest or significance or have outstanding size, age, rarity, shape or location.*

Policy OSRC-7o: Encourage the use of native plant species in landscaping. For discretionary projects, require the use of native or compatible non-native species for landscaping where consistent with fire safety. Prohibit the use of invasive exotic species.

Policy OSRC-7p: Support voluntary programs for habitat restoration and enhancement, hazardous fuel management, removal and control of invasive exotics, native plant revegetation, treatment of woodlands affected by Sudden Oak Death, use of fencerows and hedgerows, and management of biotic habitat.

Policy OSRC-7u: Identify and consider designation of old growth Redwood and Douglas Fir as sensitive natural communities. Encourage preservation and public acquisition of remaining old growth Redwood and Douglas Fir forests in private ownership with the County. Because of their rarity and biological importance, these sensitive natural community types should be made priorities for protection through conservation easements, fee title purchase, or other mechanisms.

Riparian Corridors

Goal OSRC-8: Protect and enhance Riparian Corridors and functions along streams, balancing the need for agricultural production, urban development, timber and mining operations, and other land uses with the preservation of riparian vegetation, protection of water resources, flood control, bank stabilization, and other riparian functions and values.

Objective OSRC-8-1: Designate all streams shown on USGS 7.5 minute quadrangle topographic maps as of March 18, 2003, as Riparian Corridors and establish streamside conservation areas along these designated corridors.

Policy OSRC-8i: As part of the environmental review process, refer discretionary permit applications near streams to CDFG and other agencies responsible for natural resource protection.

Policy OSRC-8j: Notify permit applicants of possible Federal and State permit requirements in areas near streams and notify landowners whose property overlaps or touches a designated Riparian Corridor regarding the public hearings on the proposed regulations affecting them.

Franz Valley Area Plan

The Project site is located within the boundary of the *Franz Valley Area Plan*. Originally adopted in 1979 as the *Franz Valley Specific Plan*, the specific plan has since been revised to be made consistent with the current General Plan, and readopted as the *Franz Valley Area Plan*. The following policies are applicable to the proposed Project:

Biotic Habitat Areas

- (1) Review all development and land conversion proposals in the vicinity of sensitive areas and unique features in order to mitigate potential adverse impacts.
- (2) Encourage open space land preservation activities and any scientific and educational activities which would protect and enhance the natural values of the area.

County of Sonoma Tree Ordinance

The Tree Protection Ordinance (No. 4014) sets preservation and protection standards for protected trees with a 9 inch or greater diameter at breast height (dbh). Protected trees include big leaf maple (*Acer macrophyllum*), black oak, blue oak (*Quercus douglasii*), coast live oak, interior live oak, madrone, oracle oak (*Quercus morehus*), Oregon oak (*Quercus garryana*), redwood, valley oak, California bay and their hybrids. Only mature valley oaks are considered a protected tree of special significance and are given special consideration in the design review process to the extent that mature specimens shall be retained to the fullest extent possible. The number and size of replacement plantings is calculated using one of the two arboreal value charts as instructed in the ordinance. Arboreal Value Chart No. 1 requires analysis to be completed in the construction area and requires 100 percent replacement or in lieu fees. Arboreal Value Chart No. 2 requires analysis of the entire site but allows for removal of up to 50 percent of the arboreal value. Compensation for the loss of trees greater than 50 percent requires determining the number of trees to replace using the arboreal value chart. Lot line adjustments, zoning permits, and agricultural uses are exempt from this ordinance.

The Heritage or Landmark Tree Ordinance (No. 3651) preserves heritage or landmark trees that have been nominated and accepted by Sonoma County as a heritage or landmark tree. This ordinance requires that any person or entity proposing to remove or damage a heritage or landmark tree shall first obtain a tree permit.

Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of an impact are based on the environmental checklist in Appendix G of the CEQA Guidelines. For this analysis, development of the proposed winery would be considered to have a significant impact associated with biological resources if it would:

1. 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 the CDFG, USFWS, or NMFS;
2. 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 the CDFG or USFWS;

3. 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;
4. 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;
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
6. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved plan.

All of the significance criteria listed above will be included in the impact analysis, except for significance criteria No. 6. There are no adopted habitat conservation plans, natural community conservation plans, or other approved plan for the Project site and, therefore, impacts related to conflict with such a plan are not applicable and are not further discussed in this section.

Impacts Analysis

For the impact analysis, the definition of “substantial,” as used in the significance criteria above, has three principal components, each of which contributes to the determination of impacts on biological resources and their significance:

1. Magnitude and duration of the impact (e.g., substantial/not substantial)
2. Uniqueness of the affected resource (rarity)
3. Susceptibility of the affected resource to disturbance

This analysis focuses on potential impacts, including direct and indirect effects, of the proposed Project related to biological resources. Direct effects are defined as those that are caused by the Project and occur at the same time and place, while indirect effects are defined as those which are caused by the Project and are later in time or farther removed in distance, but are still reasonably foreseeable. This analysis considers Project plans, current conditions on the Project site, and applicable regulations and guidelines. Impacts are categorized as either “no impact,” “less than significant impact,” “less than significant with mitigation,” or “significant and unavoidable.”

Special-status Plant Species

Impact D.1: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species. This would be a less than significant impact with mitigation.

Based on the results of focused plant surveys, one special-status species, narrow-anthered California brodiaea, is present on the proposed winery development site. This includes a total of approximately 140 plants at the locations proposed for the parking and landscaping areas, two buildings, and water storage tank sites (Prunuske Chatham, Inc., 2010). Vegetation clearing and

grubbing, grading, and construction of the winery would adversely affect this species through the direct loss of individuals and habitat, resulting in a potentially significant impact.

In addition, areas outside of the limits of the proposed winery development site have the potential to support suitable habitat for special-status plant species. These areas were not surveyed and, if present, special-status plants could be inadvertently affected through the direct loss of individuals or habitat loss or modifications by encroachment by construction vehicles, equipment, or personnel during vegetation clearing and grubbing, grading, and construction of the winery. Such impacts would be potentially significant.

Implementation of Mitigation Measures D.1a and D.1b below would reduce potentially significant impacts on special-status plant species to less than significant.

Mitigation Measure D.1a: The populations of narrow-anthered California brodiaea shall be salvaged and transferred at a 1:1 ratio to suitable habitat on the Cornell Farms property, preferably adjacent to the proposed winery development site. Prior to plant salvage efforts, a five-year mitigation plan shall be developed by a qualified biologist in coordination with the CDFG, and appropriate authorizations from the CDFG shall be obtained. The mitigation plan shall be commenced to the satisfaction of the CDFG and County prior to the initiation of construction of the proposed Project.

The mitigation plan shall include information regarding the mitigation site (i.e., site selection process, including alternative sites considered, site location and description, and site preparation activities), procedures for collecting and transferring plants, and maintenance activities (e.g., weeding, erosion control, herbivore control, supplemental watering, etc.), schedule, and methods for determining the need for maintenance. Monitoring objectives and goals, performance criteria, sampling techniques and procedures, monitoring schedule, remedial measures, reporting requirements, long-term protection measures, and funding sources shall also be included in the mitigation plan, as well as any additional information not listed here but identified in the mitigation plan annotated outline developed by the CDFG (CDFG, 1990). The performance criteria shall include, but are not limited to, maximum feasible survival rate of transferred plants, absence of very invasive non-native plant species, and a self-sufficient population with no net decrease in the current number of plants at the end of five years.

Mitigation Measure D.1b: Prior to commencement of any construction activities, including construction equipment and vehicle mobilization, a mandatory environmental education program for construction personnel shall be conducted by a qualified biologist. The program shall cover special-status species that are known or have the potential to occur in the vicinity of the proposed winery development site, as well as other sensitive biological resources (e.g., sensitive natural communities, federal and state jurisdictional waters), and the required mitigation measures that must be followed by all construction personnel to avoid or minimize Project effects on these resources. The program shall also cover the penalties for noncompliance with the biological mitigation requirements.

The Project applicant shall ensure that the contractor is responsible for ensuring that construction personnel adhere to the biological mitigation requirements. If new construction personnel are added to the Project, the applicant and applicant's contractors shall ensure that all new personnel receive the mandatory training prior to starting work.

This may take the form of written instruction and/or use of a video prepared by the qualified biologist covering the same material presented in the initial education program. At a minimum, the mitigation requirements that shall be followed by construction personnel include:

- a. Construction personnel will adhere to designated limits of the proposed winery development site and will not go outside these limits.
- b. Project-related vehicles and construction equipment will restrict off-road travel to designated work areas.
- c. The contractor will provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage will be removed daily from the work area. Construction personnel will not feed or otherwise attract wildlife to the work area.
- d. No pets or firearms will be allowed in the work area.
- e. To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated work areas.

Significance after Mitigation: Less than Significant.

Sensitive Natural Communities

Impact D.2: The proposed Project could have a substantial adverse effect on sensitive natural communities. This would be a less than significant impact with mitigation.

While several of the vegetation communities and associated wildlife habitats on the Project site are considered sensitive by the resource and regulatory agencies (see Sensitive Natural Communities and Regulatory Framework sections above), oak woodland is the only one of these communities found within the limits of the proposed winery development site that would be impacted by the Project. Construction of the winery buildings and wine caves would result in the loss of approximately 0.34 acre of oak woodland, specifically *Quercus agrifolia* Woodland Alliance (coast live oak woodland), including the removal of up to five coast live oak trees. In addition, construction of the rain gardens proposed along Wappo Road would contribute to the loss of oak woodland by removal of additional coast live oak and interior live oak trees. While much of the oak woodlands on the Project site would remain undisturbed and the applicant will incorporate the transferring and planting of oak trees into the proposed Project, the loss of this community would be significant without mitigation.

In addition to direct adverse affects, oak woodlands, as well as other sensitive natural communities, outside the limits of the proposed winery development site could be inadvertently affected through the direct removal or damage by encroachment by construction vehicles, equipment, or personnel during vegetation clearing and grubbing, grading, and construction of the winery. Such impacts would be potentially significant.

Transferring and Planting Oak Trees. Oak trees within the limits of the proposed winery development site that would be removed under the Project are proposed to either be transplanted or replaced with new oak trees as part of the landscaping plan and in accordance with recommendations provided by a certified arborist, Becky Duckles (Ted Winfield & Associates et al., 2011). This includes transplanting at least three coast live oak trees that are in good condition to the location proposed for the parking area and planting new oak trees at a minimum of 3:1 replacement to impact ratio in the grasslands adjacent to the parking area. Oak trees that would be transplanted would be transferred under the direction and supervision of a certified arborist, and new oak trees that would be planted would be from acorns collected from oak trees on the Project site and grown to seedling stage by a professional nursery with experience growing native oak trees. Following planting, seedlings would be irrigated, as needed, for the first three years. Protective fencing would be installed around the seedlings to prevent browsing by wildlife. In addition, preventative measures (e.g., drenching the lower tree trunks using AgriFos [potassium phosphonate] along with PentraBark) would be implemented on transplanted and planted oak trees to protect the trees from sudden oak death. Though transplanting provides immediate ecological and aesthetic benefits, for the purposes of this analysis, it is assumed that salvaging existing trees will not be successful. The mitigation proposed to be required below takes this into account.

The effect of the Project applicant's proposed tree transplant and replacement plan, compliance with the best management practices (BMPs) outlined in the grading and erosion control plan that would be prepared for the Project as part of the County permitting process and Storm Water Pollution Prevention Plan (SWPPP) prepared for the Project as part of the National Pollutant Discharge Elimination System (NPDES) General Construction Activity Storm Water Permit (see Impact B.4 in Section IV.B, Geology, Soils and Seismicity and Impact C.1 in Section IV.C, Hydrology and Water Quality), and implementation of Mitigation Measure D.1b (environmental education program) above and Mitigation Measures D.2b-d (sensitive community protection) below would reduce direct impacts on oak woodlands, and potential indirect impacts on oak woodlands and other sensitive communities to less than significant.

Mitigation Measure D.2a: Implement Mitigation Measure D.1b (environmental education program).

Mitigation Measure D.2b: Prior to commencement of any construction activities, including construction equipment and vehicle mobilization, the Project applicant shall retain a certified arborist to tag and assess all trees within the limits of the proposed rain gardens. Trees shall be tagged to correspond with a tree exhibit map. Also, the genus and species of the trees, size of the trees at DBH, and structure and vigor of the trees shall be determined, and an evaluation of the trees' resource value (i.e., locating trees deserving protection) shall be completed. All trees shall receive a visual tree assessment (VTA – meaning tree observations shall be from the ground and that no special devices [e.g., increment borers, drills, resistographs, etc.] shall be used). Following completion of the tree survey, the arborist shall prepare a report that shall at a minimum provide a description of the general character of the trees within the limits of the proposed rain gardens and identify opportunities and constraints for preservation. The report shall be provided to the County for review.

Based on the results of the tree survey, the proposed rain gardens shall be sited, to the maximum extent feasible, to avoid impacts to oak woodlands and individual oak trees. If avoidance is not feasible, the Project applicant shall transfer or plant new oak trees consistent with Mitigation Measure D.2c below.

Mitigation Measure D.2c: In addition to transferring and planting new oak trees to mitigate for those removed by construction of the Project, the following measures shall be implemented:

- a. A seven-year mitigation plan shall be developed by a certified arborist in coordination with the CDFG, and appropriate authorizations from the CDFG shall be obtained, prior to transferring and planting new oak trees. The mitigation plan shall be commenced to the satisfaction of the CDFG and County prior to the initiation of construction of the proposed Project. The mitigation plan shall include information regarding the mitigation site (i.e., site selection process, including alternative sites considered, site location and description, and site preparation activities), procedures for acorn collection, transplanting and planting trees, and maintenance activities (e.g., weeding, erosion control, herbivore control, supplemental watering, etc.), schedule, and methods for determining the need for maintenance. Monitoring objectives and goals, performance criteria, sampling techniques and procedures, monitoring schedule, remedial measures, reporting requirements, long-term protection measures, and funding sources shall also be included in the mitigation plan, as well as any additional information not listed here but identified in the mitigation plan annotated outline developed by the CDFG (CDFG, 1990). The plan shall provide for the survival of a minimum of three surviving trees for each tree removed or transplanted as a result of the project at the end of the seven-year monitoring period.
- b. The Project applicant shall permanently protect oak woodland habitat, at a 2:1 ratio on the current Cornell Farms property. The oak woodland, shall be protected under a permanent conservation easement or fee title dedication, to be approved by the CDFG and County, and implemented prior to the issuance of building, grading, or other development permits. A minimum of 0.68 acres shall be protected to compensate for the 0.34 acres disturbed by the proposed winery site. Additional acreage shall be protected at the same ratio for any further impacts to oak woodlands as determined by the County and the vegetation alliance maps once the grading and drainage plans are finalized. The easement or agreement shall specify that the oak woodland habitat is to remain in perpetuity, and shall specify the land management and maintenance practices designed to protect the habitat, a baseline report documenting the existing habitat conditions (i.e. a tree survey conducted by a certified arborist), a habitat monitoring plan, designate the party responsible for all actions related to management and maintenance, and specify limitations and restrictions on land use (i.e. access, fencing, grazing, tree planting or pruning, response to catastrophic events such as wildfire or pest invasion).

Mitigation Measure D.2d: The following measures shall be implemented by the Project applicant to avoid potential indirect impacts to sensitive natural communities:

- a. Protective chain-link fencing at least six feet high with signs and flagging shall be erected around all preserved vegetation communities where adjacent to vegetation clearing and grubbing, grading, or other construction activities. The protective fence shall be installed at a minimum of five feet beyond the tree canopy dripline of 20 feet

beyond wetlands and other waters. The intent of protection fencing is to prevent inadvertent limb/vegetation damage, root damage and/or compaction or encroachment by construction equipment. The protective fencing shall be depicted on all construction plans provided to contractors and labeled clearly to prohibit entry, and the placement of the fence in the field shall be approved by a certified arborist and/or qualified biologist prior to commencement of any construction activities. The contractor shall maintain the fence to keep it upright, taut and aligned at all times. Fencing shall be removed only after all construction activities are completed.

- b. Contractors shall avoid using heavy equipment around the sensitive natural communities. Operating heavy machinery around the root zones of trees would increase soil compaction, which decreases soil aeration and, subsequently, reduces water penetration into the soil. All heavy equipment and vehicles shall, at minimum, stay out of the fenced protected zones, unless where specifically approved in writing and under the supervision of a certified arborist and/or qualified biologist.
- c. Contractors shall not store or discard any construction materials within the fenced protected zones, and shall remove all foreign debris within these areas. In addition, contractors shall avoid draining or leakage of equipment fluids near fenced protected zones. Fluids such as gasoline, diesel, oils, hydraulics, brake and transmission fluids, paint, paint thinners, and glycol (anti-freeze) shall be disposed of properly.

Significance after Mitigation: Less than Significant.

Jurisdictional Waters and Wetlands

Impact D.3: Development of the proposed Project could have a substantial adverse effect on federally protected wetlands. This would be a less than significant impact with mitigation.

While the proposed winery development site does not support any potentially jurisdictional wetlands or other waters, several are located elsewhere on the Cornell Farms property and surrounding area (e.g., Ponds A and B, Drainages A and B, mainstem of Mark West Creek and its North Fork). There would be no direct impacts (i.e., placement of fill material) to any of these features. However, construction and operation of the Project could indirectly impact potentially jurisdictional wetlands and other waters through increased sedimentation and hydrological modifications. Compliance with the BMPs outlined in the approved grading and erosion control plan prepared for the Project as part of the County permitting process and SWPPP prepared for the Project as part of the NPDES General Construction Activity Storm Water Permit (see Impact B.4 in Section IV.B, Geology, Soils and Seismicity and Impact C.1 in Section IV.C, Hydrology and Water Quality), as well as the proposed stormwater improvements (e.g., rain gardens and vegetated buffers) on the lower section of Wappo Road (see Chapter III, Project Description) and Mitigation Measures D.1b (environmental education program) and D.2d (sensitive community protection) above, would reduce potential significant impacts to jurisdictional wetlands and other waters.

Mitigation Measure D.3: Implement Mitigation Measures D.1b (environmental education program) and Mitigation Measure D.2d (sensitive community protection).

Significance after Mitigation: Less than Significant.

Special-status Animal Species

While a number of special-status animal species are known or have the potential to occur on the Project site, few are expected to occur within the limits of the proposed winery development site (see Table BIO-2 in Appendix BIO). These species, as well as special-status amphibian, reptile, and fish species known to occur in Mark West Creek in the Project vicinity that could be impacted by the Project, are discussed below and, where appropriate, groups of species are discussed collectively.

California Red-legged Frog

Impact D.4: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on California red-legged frog (CRLF). This would be a less than significant impact.

The USFWS has indicated that the Project site should be presumed to be occupied by CRLF due to the presence of potentially suitable breeding habitat in Ponds A and B and foraging, resting, and dispersal habitat in the adjacent upland areas and a recent observation of the species within 5 miles of the site (USFWS, 2010b; Ted Winfield & Associates et al., 2011; F. Gardipee, USFWS, pers. comm., 2012). However, a protocol-level survey on the Project site in 2011 resulted in negative findings of CRLFs. In addition, both ponds on the site are known to support non-native, predatory fish (e.g., largemouth bass, bluegill, and western mosquitofish) and bullfrogs (Ted Winfield & Associates et al., 2011), all of which have been identified as substantial contributors to the decline of CRLFs (USFWS, 2002), and the only occurrences of CRLF in the Mark West Creek watershed are over 8 miles from the Project site. For these reasons, construction and operation of the Project is not anticipated to adversely affect CRLF or its habitat.

Proposed CRLF Pre-Construction Biological Surveys. While no significant Project impacts to CRLF are identified, and no mitigation measures are required, as part of the Project, the Project applicant nevertheless proposes to have a USFWS-approved biologist conduct CRLF preconstruction surveys within the limits of the proposed winery development site prior to the commencement of any construction activities. The name and credentials of the biologist would be submitted to the USFWS at least 15 days prior to the commencement of the survey. If CRLFs are found during the preconstruction survey, the approved biologist would immediately contact the Sacramento Fish & Wildlife Office. No construction activities would occur until appropriate avoidance and minimization measures (e.g., exclusionary fencing, on-site biological monitor) are determined, as well as appropriate authorization from the USFWS and CDFG are obtained.

Implementation of Mitigation Measures D.1b (environmental education program) and D.2d, (sensitive community protection) above, and compliance with the BMPs outlined in the grading and erosion control plan that would be prepared for the Project as part of the County permitting process and SWPPP that would be prepared for the Project as part of the NPDES General Construction Activity Storm Water Permit (see Impact B.4 in Section IV.B, Geology, Soils and Seismicity and Impact C.1 in Section IV.C Hydrology and Water Quality) would further ensure any potential Project impacts on CRLF or its habitat would remain less than significant.

Mitigation: None Required.

Foothill Yellow-legged Frog and Western Pond Turtle

Impact D.5: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on foothill yellow-legged frog (FYLF) and western pond turtle (WPT). This would be a less than significant impact with mitigation.

While potentially suitable habitat for FYLF and WPT is present in the Project vicinity and occurrences of these species are recorded from Mark West Creek, FYLF and WPT were not found on the Project site during the protocol-level survey for CRLF or during the various other field surveys. For this reason, no direct adverse effects to FYLF or WPT are anticipated from construction and operation of the proposed Project. Furthermore, as discussed under Impact C.5, above, the Project applicant proposes to have a USFWS-approved biologist conduct CRLF preconstruction surveys within the limits of the proposed winery development site prior to the commencement of any construction activities (see Impact D.4 above). The preconstruction CRLF surveys would be conducted in manner that FYLF and WPT species would also be identifiable. These surveys would further ensure that FYLF and WPT would not be directly affected by the proposed Project.

Vegetation clearing and grubbing, grading, and construction of the Project could result in short-term indirect adverse effects to FYLF and WPT through decreased water quality. Such activities would disturb the ground surface and in turn increase the erosion rates for topsoils on the proposed winery development site during and following construction. Potential increases in erosion could result in additional sediment entering potentially suitable aquatic habitats for FYLF and WPT. In addition, potential accidental or unintentional runoff of toxic materials or other harmful substances (e.g., fuels, lubricants, coolants, etc.) could decrease water quality.

Compliance with the BMPs outlined in the grading and erosion control plan that would be prepared for the Project as part of the County permitting process and SWPPP that would be prepared for the Project as part of the NPDES General Construction Activity Storm Water Permit (see Impact B.4 in Section IV.B, Geology, Soils and Seismicity and Impact C.1 in Section IV.C, Hydrology and Water Quality), as well as the proposed stormwater improvements (e.g., rain gardens and vegetated buffers) on the lower section of Wappo Road (see Chapter III, Project Description), and Mitigation Measures D.1b (environmental education program) and D.2d

(sensitive community protection) above, would reduce potential significant impacts to FYLF and WPT to a less-than-significant level.

Mitigation Measure D.5: Implement Mitigation Measures D.1b (environmental education program) and D-2d (sensitive community protection).

Significance after Mitigation: Less than Significant.

River Lamprey, Coho Salmon, and Steelhead

Impact D.6: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on River Lamprey, Coho Salmon, and Steelhead. This would be a less than significant impact with mitigation.

As discussed in the Setting section, the Project site does not support potentially suitable habitat for river lamprey, coho salmon, or steelhead. However, these species occupy Mark West Creek (Fawcett et al., 1996; SCWA, 2002; Fawcett et al., 2003; SWRCB, 2012), and its North Fork has historically supported steelhead (Aquatic Systems Research, 2010, CDFG, 2008), and may have supported coho salmon (CDFG, 2008). In addition, Mark West Creek downstream of impassable barriers is included in the final ruling on critical habitat for coho salmon and steelhead. Steelhead have recently been observed in Mark West Creek downstream of the Project site, and stranded in pools in the section of the North Fork of Mark West Creek below St. Helena Road (Higgins, 2012; SWRCB, 2012). However, the SWRCB has recently concluded that there is no evidence that existing groundwater use at Cornell Farms is responsible for diminished flows in Mark West Creek, or fish strandings recently observed in the section of the North Fork of Mark West Creek below St. Helena Road (SWRCB, 2012).

While no direct adverse effects to river lamprey, coho salmon, or steelhead or its designated critical habitat are anticipated from construction and operation of the proposed Project, these species, as well as critical habitat for steelhead, could be indirectly affected through decreased water quality and alterations to stream flow.

Vegetation clearing and grubbing, grading, and construction of the Project would disturb the ground surface and in turn increase the erosion rates for topsoils on the proposed winery development site during and following construction. Potential increases in erosion could result in additional sediment entering suitable aquatic habitat for river lamprey, coho salmon, and steelhead, causing turbidity and loss of benthic productivity and fish habitat. Compliance with the BMPs outlined in the grading and erosion control plan that would be prepared for the Project as part of the County permitting process and SWPPP that would be prepared for the Project as part of the NPDES General Construction Activity Storm Water Permit (see Impact B.4 in Section IV.B, Geology, Soils and Seismicity and Impact C.1 in Section IV.C Hydrology and Water Quality), as well as implementation of the proposed stormwater improvements (e.g., rain gardens and vegetated buffers on Wappo Road) (see Chapter III, Project Description) and Mitigation Measures D.1b (environmental education program) and D.2d (sensitive community protection)

above, would reduce such potential significant impacts to river lamprey, coho salmon, and steelhead (and their critical habitat) to a less-than-significant level.

As discussed in Impact C.3 in Section IV.C, Hydrology and Water Quality, under the proposed Project, groundwater would be pumped between November and July to serve the proposed winery operations. Groundwater in the aquifer underlying the Project site ultimately migrates to Mark West Creek. The late summer flow in Mark West Creek is derived from groundwater flowing out of the aquifer where the elevation of the creek bed drops below the elevation of the water table (i.e., base flow). A reduction in the base flow to Mark West Creek could thereby decrease the habitat availability for juvenile coho salmon and steelhead. However, as discussed in Impact C.3 in Section IV.C, Hydrology and Water Quality, the Project proposes to use harvested rain water and treated winery process water to supplement irrigation of the existing Cornell Farms vineyards, which currently rely on groundwater between late August and early November. As a result, the Project would reduce the existing annual groundwater pumped at Cornell Farms, and correspondingly, reduce the annual demand on the aquifer. In addition, the Project would reduce the existing groundwater pumping during the critical dry season months of August through October. Consequently, the Project groundwater pumping would not further diminish dry season baseflow to Mark West Creek, and therefore, the impact to a decrease in the habitat availability for juvenile coho salmon and steelhead would be less than significant. Furthermore, as discussed in Impact C.5 in Section IV.C, the proposed rain water harvesting would not result in a noticeable reduction in surface flows in Mark West Creek during the rainy season. Accordingly, the Project impact of rain water harvesting to a decrease the habitat availability for river lamprey, coho salmon, and steelhead would be less than significant.

Mitigation Measure D.6: Implement Mitigation Measures D.1b (environmental education program) and D.2d (sensitive community protection).

Significance after Mitigation: Less than Significant.

Northern Spotted Owl

Impact D.7: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, to the Northern spotted owl (NSO). This would be a less than significant impact.

Based on protocol-level surveys conducted on the Project site in 2011, the two known NSO territories located within 1.3 miles of the site are still occupied (see Figure IV.D-6). While construction and operation of the proposed Project could affect NSO through the direct loss of habitat and disturbance, such impacts are not anticipated to result in substantial adverse effects on NSO or their habitat due to the type of habitat removed by the proposed Project and the distance between the occupied territories and the proposed Project.

Construction of the proposed Project would result in the loss of approximately 0.34 acre of oak woodland. While this is not the preferred habitat for NSO, it still supports potentially suitable

foraging habitat for owls, particularly due to its integration with Douglas fir forest on the Project site. The USFWS generally considers projects not likely to adversely affect NSO if at least 500 acres of suitable habitat remains post-construction within 0.7 mile of an occupied territory and at least 1,336 acres of suitable habitat remains post-construction within 1.3 miles of an occupied territory, and no suitable habitat is degraded or removed in the nest grove (USFWS, 2011). It is estimated that about 785 acres and 857 acres would remain post-construction within 0.7 mile of NSO territory #1 and NSO territory #2, respectively, and over 2,500 acres would remain post-construction within 1.3 miles of both territories.¹⁵ In addition, no suitable habitat would be degraded or removed within the nest grove. For these reasons, construction of the proposed Project is not anticipated to adversely affect potential foraging habitat (or critical habitat) for NSO.

Also, the effect of implementation of transferring and planting oak trees (see Impact D.2 above), as well as Mitigation Measures D.1b (environmental education program), and D.2b through D.2d (sensitive community protection), above, would further ensure any potential impacts to foraging habitat for NSO would remain less than significant.

Activities associated with the construction and operation of the proposed Project could increase noise and visual disturbance to NSO in the Project vicinity. However, such disturbances are not anticipated to reach levels (i.e., specified decibels or visual proximity distances) to significantly disrupt normal behavior patterns of owls (i.e., harass). Based on guidance provided by the USFWS (2006), the proposed Project would have to be within 50 meter (165 feet) of an occupied territory to have substantial noise impact. The two territories within 1.3 miles are well outside of this distance (one located approximately 1,900 feet from the Project site [NSO territory #1] and the other located approximately 4,200 feet [NSO territory #2]) (see Figure IV.D-6). In addition, for the proposed Project to have a substantial visual impact on NSO, the winery would have to be within 40 meters (132 feet) of an occupied nest (USFWS, 2006). The proposed Project is well outside of this distance, and would not have a direct line of sight to the occupied territories. For these reasons, the proposed Project is not anticipated to significantly disturb NSO.

Mitigation: None Required.

Other Special-status Birds

Impact D.8: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status birds. This would be a less than significant impact with mitigation.

The vegetation communities on and in the vicinity of the proposed winery development site support potentially suitable nesting habitat for a number of special-status bird species, including Cooper's hawk, sharp-shinned hawk, grasshopper sparrow, Bell's sage sparrow, great egret, great blue heron, long-eared owl, oak titmouse, Vaux's swift, olive-sided flycatcher, snowy egret,

¹⁵ Estimate based on GIS analysis using data from the California Land Cover Mapping and Monitoring Program, California Department of Forestry and Fire Protection and USDA Forest Service, 2002.

white-tailed kite, Nuttall's woodpecker, purple martin, and Allen's hummingbird. In addition, other bird species that may be protected under the MBTA and the California Fish and Game Code could nest in suitable habitats on or in the vicinity of the site. While no special-status bird species were found actively nesting during field surveys conducted in 2011, birds could establish nests prior to the commencement of construction activities. Construction activities, such as vegetation clearing and grubbing, grading, and construction of the winery, could adversely affect nesting birds through the direct loss of individuals, injury, or disturbance, if present. The nesting season is a critical period for maintenance of bird populations and the physical removal or harm to nests, or disturbance activities that cause birds to abandon an active nest, would be a potentially significant impact.

In addition to nesting habitat, the vegetation communities on and in the vicinity of the proposed winery development site support potentially suitable roosting and foraging habitat for special-status bird species including (but not limited to) great egret, great blue heron, golden eagle, ferruginous hawk, snowy egret, and America peregrine falcon. If such species are roosting or foraging within habitats on or in the vicinity of the site, increased noise and vibrations from construction vehicles, equipment, and personnel could cause minor alteration in these birds' behavior. Roosting or foraging birds may be flushed due to the construction-related disturbances, or may avoid suitable habitat on or in the vicinity of the proposed winery development site due to such disturbances. Although flushing may increase the birds' energy demands, it is not expected to result in a substantial adverse affect on any special-status birds potentially present. Construction-related disturbances would be temporary and suitable roosting and foraging habitat is present throughout the Cornell Farms property. For these reasons, impacts on roosting and foraging birds would be less than significant.

Conversion of previously undeveloped lands on the Project site would result in the loss of potentially suitable nesting, roosting, and foraging habitat for a number of special-status bird species. However, this loss would be minimal, totaling less than one acre, and adequate nesting, roosting, and foraging habitat in the vicinity of the proposed winery development site would remain undisturbed. In addition, a variety of new native trees, shrubs, and ground cover would be planted throughout the proposed winery development site and would provide suitable habitat for birds following development of the proposed Project. The loss of potential nesting, roosting, and foraging habitat for special-status birds would therefore be less than significant.

Following development of the proposed Project, special-status birds could be directly and indirectly impacted by increased human-related disturbances caused by the operation of the winery. However, such disturbances are not anticipated to adversely affect nesting, roosting, or foraging birds. The majority of the winery operation would either occur indoors or beneath a covered area between the winery buildings and, therefore, would be less than significant.

Implementation of Mitigation Measure D.8, below would reduce potentially significant impacts on special-status bird species to less than significant.

Mitigation Measure D.8: The Project applicant shall implement one of the following measures to avoid impacts to nesting birds during construction of the proposed Project:

- a. Conduct vegetation clearing and grubbing, grading, and other construction activities associated with construction of the proposed winery during the non-breeding season (in general, September 1st through January 31st); or
- b. Conduct preconstruction surveys for nesting birds if construction activities are to take place during the nesting season (in general, February 1st through August 31st). Within the 30-day period prior to ground disturbance activities associated with vegetation clearing and grubbing and grading, a qualified biologist shall conduct weekly surveys, with the last survey being conducted no more than three days prior to the commencement of construction activities to confirm the presence or absence of active nests in the Project vicinity (at least 500 feet around the proposed winery development site, where accessible). If ground disturbance activities are delayed, then additional preconstruction surveys shall be conducted such that no more than three days will have lapsed between the survey and ground disturbance activities.

If no active nests are found, no further mitigation would be required following submittal of a survey report letter to the County. However, if active nests are found, species-specific measures shall be prepared by a qualified biologist in coordination with the CDFG, and implemented to prevent the direct loss or abandonment of the active nest. At a minimum, construction activities in the vicinity of a nest shall be deferred until the young have fledged, and an exclusion buffer zone shall be established. A minimum exclusion buffer zone of 50 feet is typically recommended by CDFG for songbird nests, and 200 to 500 feet for raptor nests, depending on the species and location. The perimeter of the exclusion buffer zone shall be fenced or adequately demarcated with staked flagging at 20-foot intervals, and construction personnel shall be restricted from the area. A survey report by the qualified biologist verifying that the young have fledged shall be submitted to the County for review and concurrence prior to initiation of construction activities within the exclusion buffer zone.

Significance after Mitigation: Less than Significant.

Special-status Bats

Impact D.9: The proposed Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status bats. This would be a less than significant impact with mitigation.

Trees on the proposed winery development site support potentially suitable day, night, and maturity roosting habitat for special-status bat species that utilize trees for roosting sites (e.g., pallid bat, silver-haired bat, hoary bat, long-eared myotis, and long-legged myotis). Bats were observed on several occasions during nighttime site visits for the protocol-level CRLF survey on the proposed winery development site and at Pond A; however, identification to species was not possible. Construction of the proposed Project would result in the removal of up to five coast live oak trees. If present, roosting bats could be adversely affected through the direct loss of individuals, injury, or disturbance. Such impacts would be potentially significant.

Conversion of previously undeveloped lands on the Project site would result in the loss of potentially suitable foraging habitat for special-status bat species. However, this loss would be considered a less-than-significant impact. The loss would be minimal, totaling less than one acre, and adequate foraging habitat in the vicinity of the proposed winery development site would remain undisturbed. Also, the operation of the proposed Project is not anticipated to adversely affect bats. The typical hours of operation would be during the daytime and the majority of the winery operations would either occur indoors or beneath a covered area between the winery buildings.

Implementation of Mitigation Measure D.9 below would reduce potentially significant impacts on special-status bat species to less than significant.

Mitigation Measure D.9: Prior to commencement of any construction activities, including construction equipment and vehicle mobilization, the Project applicant shall retain a qualified biologist (i.e., a biologist possessing a Memorandum of Understanding with the CDFG for handling bats) to survey for bats.

If no evidence of bats (i.e., direct observation, guano, staining, strong odors) is found, no further mitigation would be required following submittal of a survey report letter to the County. However, if evidence of bats is found, the Project applicant shall implement the following measures to avoid impacts to bats:

- a. An exclusion buffer zone (acceptable in size to the CDFG) shall be created around active bat roosts during the breeding season (in general, April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected, and no buffer would be necessary.
- b. Removal of trees showing evidence of bat use shall occur during the period of time least likely to affect bats, as determined by a qualified bat biologist (in general, between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If passive relocation (i.e., excluding bats from roosts) is necessary to prevent impacts to bats due to roost destruction or construction-related disturbances, the relocation shall also be conducted during these periods of time, by a qualified bat biologist in coordination with the CDFG, and appropriate authorizations from the CDFG shall be obtained.
- c. All special-status bat roosts that are destroyed shall be replaced at a 1:1 ratio with a roost suitable for the displaced species (e.g., bat houses for colonial roosters). The roost shall be monitored for a five year period to ensure proper roosting habitat characteristics (e.g., suitable temperature and no leaks). The roost shall be modified as necessary to provide a suitable roosting environment for the target bat species.

Significance after Mitigation: Less than Significant.

Wildlife Movement and Nursery Sites

Impact D.10: The proposed Project would not substantially interfere with wildlife movement or impede the use of wildlife nursery sites. This would be a less than significant impact.

While the vegetation communities on the Project site likely serve as travel routes for wildlife species commonly found in the Project vicinity as they move within their home ranges in search of food, cover, and other needs, construction and operation of the proposed Project would not substantially interfere with local or regional movement of wildlife. Passage of wildlife across the proposed winery development site may be temporarily restricted through the placement of protective fencing during construction (see Mitigation Measures D.1 and D.2), but the exclusion areas would be minimal and movement around these areas is not anticipated to substantially affect wildlife through increased energy demands or exposure to predation. Following construction of the proposed Project, passage across the site would not be restricted by any physical barriers. For these reasons, no significant impact is anticipated to wildlife movement.

With regards to native wildlife nursery sites, there are no known sites on the proposed winery development site. While habitats on site likely support breeding sites, these breeding sites are unlikely to have more young that reach adulthood than nearby sites and, therefore, no significant impact is anticipated to wildlife nursery sites. Impacts to fisheries associated with Mark West Creek are addressed under Impact D.6 above.

Mitigation: None Required.

Conflict with Local Plans and Policies Protecting Biological Resources

Impact D.11: Development of the proposed Project could conflict with local policies or ordinances protecting biological resources. This would be a less than significant impact with mitigation.

The County of Sonoma General Plan 2020 and the Franz Valley Area Plan provide protection and conservation of biological resources within the County's jurisdiction. These planning documents define goals, objectives, and policies for protecting vegetation communities and associated wildlife habitats and special-status plant and animal species. Construction and operation of the proposed Project could conflict with the intent of some of these goals, objectives, and policies. However, implementation of the mitigation measures prescribed in this Section above, along with measures incorporated into the Project by the applicant, and compliance with the grading and erosion control plan and SWPPP prepared for the Project, would ensure any potential adverse effects of the proposed Project on biological resources protected by local goals, objectives, and policies would be mitigated to a less-than-significant level and ensure compliance with the County's planning documents.

Mitigation Measure D.11: Implement Mitigation Measures D.1a through D.1b, Mitigation Measures D.2a through D.2d, Mitigation Measure D.8, and Mitigation Measure D.9.

Significance after Mitigation: Less than Significant.

Cumulative Impacts

Impact D.12: The Project could contribute to cumulative impacts on biological resources.

This analysis evaluates whether the impacts of the proposed Project, together with the impacts of other projects, would result in a cumulatively considerable impact on special-status species, wetlands and other waters of the U.S., or other biological resources protected by federal, state, or local regulations or policies (based on the significance criteria and thresholds presented above). The geographical context for this cumulative analysis includes the Upper Mark West watershed.

As described by the Sotoyome Resource Conservation District (SRCD), land use practices in the Upper Mark West watershed historically focused around ranching and timber harvest. Today, these practices are still in place, but to a lesser extent. Rural residential development increased in the 1960s, and vineyard development increased over the last half of the twentieth century. Current land use within the Upper Mark West watershed is comprised mostly of forest and chaparral, grassland and pasture, and rural residential areas (SRCD, 2008). Also present, but to a lesser extent, are vineyards, orchards, vacant rural residential lands, and other miscellaneous land types (e.g., recreational and ecologically protected areas). Together, these past and present land use practices have had both the potential to adversely affect and benefit the biological resources on watershed lands. Certain plant and animal species are naturally well-suited to human-modified habitats, some are able to adapt to changes, and others decrease in number or disappear through a combination of mortality or emigration.

While the Upper Mark West watershed continues to support a diverse assemblage of natural vegetation communities and habitats for a wide variety of plant and animal species, these biological resources have been affected by the changes in land use practices within the watershed. Development has resulted in increased delivery of fine sediments and contaminants to Mark West Creek and its tributaries, as well as decreased stream flows and riparian cover. This has led to deterioration of suitable spawning and rearing habitat for salmonids over the past several years. Other species that depend on these aquatic habitats have also been affected by the loss of a food source, escape cover, and/or breeding sites. As discussed in Impact D.6, the SRWCB has recently concluded that there is no evidence that existing groundwater use at Cornell Farms is responsible for diminished flows in Mark West Creek, or responsible for the fish strandings recently observed in the section of the North Fork of Mark West Creek below St. Helena Road (SWRCB, 2012). Development has also resulted in increased habitat protection and restoration efforts, as various land stewardship programs have increased public awareness and involvement in monitoring and improving biological resources in the watershed.

With respect to reasonably foreseeable future projects within the area of cumulative analysis, Sonoma County PRMD is not aware of any other specific proposed future development projects on lands in the Project vicinity. The potential impacts on biological resources that could occur as a result of construction and operation of the proposed Project are discussed above. When considered in combination with the past and present projects or land use practices, the proposed Project would add only minor, incremental contribution to cumulative impacts on the affected biological resources. Although speculative, it is anticipated that there will be some continued development in the area that will require ministerial permits and result in some impacts in the future. This analysis takes into account the effect of such development.

The mitigation measures identified in this section take into account not only whether Project impacts are significant, but the need to reduce cumulative impacts to a level that is not cumulatively considerable. Compliance with the required regulatory permits; the oak woodlands mitigation, the stormwater improvements, and water conservation measures; and the implementation of the identified mitigation measures reduces the magnitude of the Project's specific contribution to cumulative impacts to a level that would either not be present at all or would not be cumulatively considerable.

Mitigation: The mitigation measures discussed in this section, and discussed in Section IV.C, Hydrology and Water Quality, would eliminate biological impacts or reduce biological impacts to a level that is not cumulatively considerable.

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CHAPTER V

Alternatives

A. Introduction

CEQA requires an evaluation of the comparative effects of a range of reasonable alternatives to the project that 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 (*CEQA Guidelines* Section 15126.6(a)). The range of alternatives is governed by the “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice (Section 15126.6(f)). The significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the proposed project (Section 15126.6(d)).

The EIR must assess the identified alternatives and determine which among the alternatives (including the Project as proposed) is the environmentally superior alternative. One of the alternatives to be assessed is the “No Project” alternative (see discussion below under that heading). If the No Project alternative is identified as the environmentally superior alternative, then another of the remaining alternatives must be identified as the environmentally superior alternative.

This chapter discusses the following alternatives to the proposed Project:

- 1) Two versions of the No Project Alternative, consisting of Alternative 1A) No Project – No Subsequent Development, and Alternative 1B) No Project – Reasonably Foreseeable Development;
- 2) Two versions of a Water Use Alternative, consisting of Alternative 2A) No Winery Dry Season Groundwater Pumping / Additional Rain Water Harvesting and Storage, and Alternative 2B) Conservation Easement(s) on Cornell Farms and/or Adjacent Property; and
- 3) Reduced Production / Reduced Footprint Alternative

The components of these alternatives are described below, including a discussion of their impacts and how they would differ from those under the proposed Project. A discussion of the environmentally superior alternative is also included in this chapter.

The *CEQA Guidelines* require that an EIR briefly describe the rationale for selecting the alternatives to be discussed (Section 15126.6(a)), and suggest that an EIR also identify any alternatives that were considered by the lead agency but were rejected as infeasible (Section 15126.6(c)). This chapter of the EIR addresses these issues.

B. Factors in Selection of Alternatives

The alternatives addressed in this EIR were selected in consideration of one or more of the following factors:

- 1) the extent to which the alternative would accomplish most of the basic objectives of the Project (see “Project Sponsor’s Objectives” in Chapter III);
- 2) the extent to which the alternative would avoid or lessen any of the identified significant adverse environmental effects of the Project;
- 3) 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 acquire, control, or otherwise have access to the site;
- 4) the appropriateness of the alternative in contributing to a “reasonable range” of alternatives necessary to permit a reasoned choice; and
- 5) the requirement of *CEQA Guidelines* to consider a “no project” alternative as well as an “environmentally superior” alternative (*CEQA Guidelines*, Section 15126.6).

In consideration of the above factors, three alternatives (including two variations of the No Project Alternative, plus two other alternatives) were selected to be addressed in this EIR. Each of these alternatives is described below.

C. Descriptions of Alternatives, and Bases for Their Selection

No Project Alternatives

Alternative 1A: No Project – No Subsequent Development

Description

Under Alternative 1A: No Project - No Subsequent Development, implementation of the proposed Project would not occur, and as a result, none of the approvals that would be required by the County under the Project would occur. All Project site characteristics would remain in their existing condition and all Project site parcels would continue to be owned by Cornell Farms. The adjoining Cornell Farms vineyards would continue to operate under their existing permit. Although this Alternative would not preclude the potential for future sale or lease of the one or more of these parcels, or the potential for other future private or public development, these potential activities would be subject to separate approvals and environmental review, as applicable. See description of Alternative 1B: No Project - Reasonably Foreseeable Development, below.

Basis for Selection

Alternative 1A: No Project – No Subsequent Development is included in this EIR because *CEQA Guidelines*, Section 15126.6(e)(1), requires that an EIR evaluate a “no project” alternative along with its impact in order to provide a comparison of the impacts of approving the proposed project with the impacts of not approving the proposed project. Pursuant to *CEQA Guidelines*, Section 15126.6(e)(3)(B), Alternative 1A: No Project Alternative – No Subsequent Development discusses the “property remaining in its existing state.”

Alternative 1B: No Project – Reasonably Foreseeable Development

Description

Under Alternative 1B: No Project – Reasonably Foreseeable Development, as under Alternative 1A, implementation of the proposed Project would not occur. As a result, none of the approvals that would be required by the County under the Project would occur under this Alternative. The existing Cornell Farms vineyards would continue to operate under their existing permit. Unlike Alternative 1A, under Alternative 1B, it is assumed the site of the proposed winery would be developed with one or more of the land uses permitted under the existing zoning for these areas.

Cornell Farms states that under this Alternative, it would potentially sell the 100 and/or 245 Wappo Road properties. Currently, the 100 and 245 Wappo Road properties each contain a residence, groundwater well and septic system; the 245 Wappo Road property additionally contains a small vineyard (less than 0.25-acre). Zoning for the 245 Wappo Road property is RRD (Resource and Rural Development), B6-100-acre density, BR (Biotic Resources), and for the 100 Wappo Road property is RR (Rural Residential), B6-15 acre density, BR, Scenic Resources (SR). Given the existing zoning and land use designations, and the existing physical characteristics and resources on the 100 and 245 Wappo Road properties, a reasonably foreseeable development scenario would be residential uses and/or agricultural cultivation, such as vineyards. Specifically, zoning would allow for a single-family residence, along with secondary dwelling unit and guest house on each property, and additionally on the 245 Wappo Road property, potential dwelling units for agricultural employees and/or caretaker.¹ Development of residential uses or agricultural activities on these properties would be limited by a number of factors, including topography, soil conditions, water availability, access, and required land use controls protecting sensitive biological habitat and water resources.

Cornell Farms states that under this Alternative, it would retain all other existing Project site parcels (i.e., the 420, 500 and 560 Wappo Road properties). Currently, the 420 Wappo Road property contains the Cornell Farms vineyards, residence and water wells and septic system, the 500 Wappo Road property contains a residence, a water well and septic system, and water storage; and the 560 Wappo Road property is primarily undeveloped with the exception of the access road. Zoning for these properties is RRD, B6-100-acre density. A reasonably foreseeable development scenario would be residential uses on the 500 and 560 Wappo Road properties, which could consist of a

¹ This development scenario assumes the existing house would either be retained or replaced.

single-family house along with secondary dwelling unit and/or guest house on each property. Given the developed nature of the 420 Wappo Road property with the Cornell Farm vineyards and other uses, no additional development is assumed on the 420 Wappo Road property.

Basis for Selection

Alternative 1B: No Project – Reasonably Foreseeable Development is included in this EIR because *CEQA Guidelines* Section 15126.6(e)(2) states that the no project alternative shall discuss “what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.”

Water Use Alternatives

Alternative 2A: No Winery Dry Season Groundwater Pumping / Additional Rain Water Harvesting

Description

This Alternative would develop the winery as proposed under the Project with two principal modifications: 1) no winery dry season groundwater pumping and 2) additional rain water harvesting, both of which are described below.

No Winery Dry Season Groundwater Pumping

The Sotoyome Resource Conservation District characterizes the dry season within the Upper Mark West watershed from April through October. As discussed in Section IV.C, Hydrology and Water Quality, under the proposed Project, groundwater would be pumped from November through July to serve the proposed winery operations. The Project also proposes to use harvested rain water and treated winery process water to supplement irrigation of the existing Cornell Farms vineyards, which currently rely on groundwater between late August and early November. As a result, the Project would reduce the existing annual groundwater pumped at Cornell Farms, and correspondingly, reduce the annual demand on the aquifer. In addition, the Project would reduce the existing groundwater pumping during the critical dry season months of August through October.

Under this Alternative, groundwater pumping at the Cornell Farms property during the dry season would be further reduced by conducting all annual groundwater pumping for the winery between the wet season months of November through March (i.e., avoid the Project-proposed winery groundwater pumping during the dry season months of April through July). This would require the winery to instead pump an additional estimated 32,600 gallons of groundwater over the five wet season months of November through March (which would otherwise occur under the Project from April through July).

This Alternative would require an increase in on-site potable water storage to accommodate this increased wet season pumped groundwater. This additional groundwater could be stored in increased potable water tank storage capacity on the 245 Wappo Road property; or in additional potable water storage elsewhere on the Cornell Farms property, which would require additional

water conveyance utilities between that point and the winery. It should be noted Cornell Farms currently maintains three existing water storage tanks (approximately 30,000 gallon capacity) on the 500 Wappo Road property which could also be utilized.

Additional Rain Water Harvesting

Under the proposed Project, the winery would harvest rain water from several areas on-site, including the winery building roofs, apron between the winery buildings, and tank pads, and store the rain water in two water storage tanks. The collected rain water would provide water to establish and maintain the winery landscaping, and supplement irrigation of the Cornell Farms vineyards.

Under this Alternative, additional rain water harvesting and storage would be provided to supplement irrigation of the Cornell vineyards beyond that proposed under the Project. To provide the additional rain water collection area for this Alternative, the existing residence on the Cornell Farms 420 Wappo Road property would be retrofitted to collect rain water from the roof; consequently, no additional rainwater collection areas would be developed in undisturbed areas. Additional rain water storage of up to 70,000 gallons is assumed to be provided on-site to accommodate the additional rain water harvested.² It is further assumed this additional harvested rain water could be stored in proximity to the vineyards to reduce the amount of additional infrastructure to pump and convey this additional source of rain water to the vineyards. Under this condition, this additional harvested rainwater would undergo water treatment (aeration and filtering) on the 420 Wappo Road property prior to use (as opposed to being conveyed to the 245 Wappo Road property for treatment).

Basis for Selection

The Proposed Project with No Winery Dry Season Groundwater Pumping / Additional Rain Water Harvesting and Storage Alternative was included to provide an alternative that would reduce environmental impacts compared to the proposed Project.

Alternative 2B: Conservation Easement(s) on Cornell Farms and/or Adjacent Property

Description

Under this Alternative, the winery would be developed as proposed under the Project, however, this Alternative would further offset Project winery water use by placing a Conservation Easement on the Cornell Farms 100 Wappo Road property and/or the adjacent 115 Wappo Road property. Specifically, under this Alternative, the following would occur on the 100 Wappo Road and/or 115 Wappo Road properties, all of which would be formalized in a Conservation Easement(s): demolish the residence(s) and potentially other structures, and relinquish in perpetuity the right to install vineyards, or build any new structure (for which a building permit is required); riparian rights to withdraw water directly from Mark West Creek; and the right to use water from the on-site surface waters or wells (other than fire protection).

² It should be noted that given existing average annual rainfall conditions in the Project area, 70,000 gallons could be regularly collected annually from the roof of the house.

Basis for Selection

Alternative 2B: Conservation Easement(s) on Cornell Farms and/or Adjacent Property was included to provide an alternative that would reduce environmental impacts compared to the proposed Project.

Alternative 3: Reduced Production / Reduced Footprint

Description

Under the Project, the winery would produce a maximum of 10,000 cases of wine per year, primarily from grapes grown on the adjoining Cornell Farms vineyards, in combination with grapes purchased from other vineyards to enhance the variety of wines produced at the winery.

Under this Alternative, the winery would have a reduced production capacity, such that it would only produce a maximum of 8,000 cases of wine per year. It is assumed that by reducing the maximum production capacity of the winery, some reduction in the Project development footprint (e.g., wine buildings and wine cave size) would be possible. It is further assumed that the hours of operation, maximum allowed visitors per day (15), and number of special events per year (10) would be identical to the Project. This potential alternative would not meet the sponsor's objectives to create a winery to produce 10,000 cases of wine annually, and would limit the ability for the winery to produce the full enhanced wine variety proposed under the Project as fewer grapes from other vineyards would be processed at the winery.

Basis for Selection

Alternative 3: Reduced Production / Reduced Footprint was included to provide an alternative that would reduce environmental impacts compared to the proposed Project.

D. Alternatives Considered But Not Carried Forward for Further Analysis

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, were considered legally or technically infeasible, economically unviable, or for other reasons, as described below.

Alternative Site

Alternative Site within Cornell Farms Property

As described in Project History in Chapter III, Project Description, other sites within the Cornell Farms property were previously considered by the applicant for development of a proposed winery, and for which the associated environmental impacts were previously analyzed. These include sites on the 420 Wappo Road property, and on the 245 Wappo Road property west of Wappo Road. In each of these instances, while development of a winery on those sites would

avoid the site-specific impacts identified at the Project site, these alternative sites would have the potential to result in comparatively greater environmental effects. Both the 420 Wappo Road and 245 Wappo Road alternative sites would place the winery development on underlying geologic materials that are less stable than those at the Project site, and in the case of the 245 Wappo Road alternative site, would place the winery development within the footprint of a dormant landslide; accordingly, extensive geotechnical mitigation would be required for these alternative sites compared to the proposed Project.

Similarly, potential development of a winery on the 100 Wappo Road property would have the potential to result in comparatively greater environmental effects than at the Project site. It is less likely that a wine cave could be constructed on 100 Wappo Road property, thereby necessitating construction of an above-ground wine storage building, resulting in a larger winery footprint than that proposed at Project site. This site would also require a greater level of development of utilities to convey process wastewater and domestic wastewater up to the 420 and 500 Wappo Road parcels, respectively, for disposal and irrigation of the vineyards. In addition, this site would place the winery and associated facilities closer to nearby residences along St. Helena Road compared to the Project. Consequently, short-term construction effects (e.g., dust, noise) and long-term winery operational effects (e.g., noise and odors) on the 100 Wappo Road property would be experienced greater at nearby receptors than if the winery is developed and operates at the Project site. In addition, given the 100 Wappo Road property's zoning designation for biotic and scenic resources, and its location adjacent to St. Helena Road, designated as a scenic corridor in the *Sonoma County General Plan 2020*, development of a winery at this location would have an overall greater potential for biological and aesthetic effects than at the Project site.

There are no other viable locations within the Cornell Farms property that are in proximity to existing roads and utilities, and for which development of a winery would result in overall less environmental impacts compared to the Project site. For these reasons this potential alternative is rejected as infeasible.

Off-site Alternative

The proposed use is allowed with a use permit under the General Plan and applicable zoning. However, as described in Chapter III, Cornell Farms has recently acquired five additional parcels in the site vicinity, including 115 Wappo Road (24 acres), 8450 St. Helena Road (2 acres), 8545 St. Helena Road (2 acres), 8516 St. Helena Road (0.38 acres), and 8565 St. Helena Road (0.03 acres). These properties are adjacent to St. Helena Road; additionally, the 8450, 8516 and 8565 St. Helena Road properties are adjacent to the Mark West Creek riverbank. Of these properties, only the 115 Wappo Road property would be of sufficient size, provide adequate set back from Mark West Creek, and be served by existing utilities, such that it could be considered as a potential alternative site for the winery and associated facilities. Zoning for this property is RR, B6-15 acre density, BR, SR. This property currently contains a house, garage, two barns, numerous small stable and shed buildings, and is served by a well and septic system.

This alternative site would avoid the site-specific impacts identified at the Project site, however, for the same reasons cited above for the 100 Wappo Road property, the 115 Wappo Road

property would have the potential to result in comparatively greater environmental effects at this alternative site. Other than the above-described properties, there are no other off-site properties within the Project vicinity owned by the applicant. For these reasons this potential alternative is rejected as infeasible.

No Hauling of Soil Off-site

Under this potential alternative, all soil excavated during construction that would be hauled to an off-site disposal site under the Project (estimated at 14,700 cubic yards) would be retained on-site. While this potential alternative would eliminate off-site truck haul trips and associated off-site environmental effects (e.g., air emissions, noise, etc.), this alternative would have the potential to create substantially greater on-site environmental impacts. Specifically, given the topography and extent of existing natural resources on the Project site, there are limited viable locations on the Cornell Farms property for the placement of this excess soil, and accordingly, the deposition of this soil would have the potential to directly and/or indirectly impact biological habitat and surface water resources. Furthermore, the internal hauling of soil; filling and grading operations; and required installation of erosion control and drainage features would require substantial new on-site construction activities which would increase short-term environmental effects in the immediate Project vicinity. For these reasons, this potential alternative is rejected as infeasible.

Use of Rainwater for Wine Processing and/or Domestic Use

A potential alternative was considered in which the winery would use harvested rain water, instead of the Project-proposed use of groundwater, for proposed wine processing and winery domestic use. Under this potential alternative, the use of harvested rain water for these purposes would be in addition to the Project-proposed use of harvested rain water for irrigation of winery landscaping and supplementing irrigation of the Cornell Farms vineyards. This potential alternative would require increasing the area of rainwater harvesting on-site and increasing the associated rainwater storage proposed under the Project, and appropriate treatment facilities.

While the practice of using harvested rain water for use in supplementing irrigation demand has become an increasing trend for agricultural-related operations, the practice of using harvested rain water for winery operations is experimental. The winery water demand for wine processing is primarily used for cleaning/sanitizing and barrel soaking/maintenance, and for domestic purposes, including drinking. This would require the source water to be free of impurities, including dirt, bird droppings, bacteria and other contaminants that can be present in harvested rain water. The cost of the required level of filtration and treatment of rain water to meet the stringent water quality standards required for wine processing and domestic use would be high. The applicant has also identified a potential stigma with the use of harvested rain water in the production of premium wines. Consequently, this potential alternative is not carried forward for further analysis.

E. Distinctive Environmental Characteristics

Alternative 1A: No Project – No Subsequent Development Alternative

Geology, Soils and Seismicity

Since no winery would be developed on the Project site and the site would be left in its existing condition, this Alternative would not result in any soil disturbance, topographic alteration or new construction on the Project site. Consequently, this Alternative would avoid all potential geologic, soil and seismic impacts associated with the proposed Project. Specifically, this Alternative would avoid potentially significant but mitigable impacts from Project development on unstable soils; would avoid potential significant but mitigable soil erosion during Project construction, would avoid exposing people or structures to potential groundshaking on the Project site in the event of an earthquake; would avoid any Project development on potentially unstable slopes or geologic materials; and would avoid any potential for development of Project septic facilities on unsuitable soils.

Hydrology and Water Quality

Since no winery would be developed on the Project site and the site would be left in its existing condition, this Alternative would not result in any activities that would affect surface and groundwater sources, and consequently, this alternative would avoid all potential hydrology and water quality impacts (albeit less than significant) associated with the proposed Project. Specifically, this Alternative would avoid any potential for sediment release during Project construction and operation; would avoid the potential for reduced surface or ground water quality from disposal of Project treated wastewater; would avoid any potential for Project groundwater pumping effects on dry season base flows to Mark West Creek or on groundwater levels; and would avoid any potential rain water harvesting effects to reduction in surface water available to the watershed.

However, since the proposed Project would not be developed, the Cornell Farms vineyards would also not have the benefit of the supplemental sources of water from the Project-proposed rain water harvesting and treatment of winery process water that would otherwise reduce existing groundwater use for vineyard irrigation.

Biological Resources

Since no winery would be developed on the Project site and the site would be left in its existing condition, this Alternative would avoid potentially significant but mitigable Project impacts to special status plant species and sensitive natural communities; potentially significant but mitigable Project impacts to jurisdictional wetlands; potentially significant but mitigable Project impacts to the special-status animal species, including foothill yellow-legged frog (FYLF), western pond turtle (WPT), river lamprey, coho salmon, and steelhead, and special-status birds and bats; avoid less than significant Project impacts to the California red-legged frog, Northern

spotted owl, interference with wildlife movement; and avoid potentially significant but mitigable Project conflicts with local policies or ordinances protecting biological resources.

Other Environmental Impacts

- 1) *Transportation and Traffic*: This Alternative would avoid Project-related increases in construction and long-term operational vehicle trips, and related potential effects on roadway operating conditions and traffic safety. However, site vicinity roadways would also not benefit from the net reduction in harvest season truck traffic that would otherwise occur under the Project.
- 2) *Air Quality*: This Alternative would avoid Project-related construction and long-term operational increases in criteria air pollutants and exposure to toxic air contaminants, and potential odor emissions.
- 3) *Greenhouse Gas (GHG) Emissions*: This Alternative would avoid Project-related construction and long-term operational increases in GHG emissions;
- 4) *Noise*: This Alternative would avoid Project-related construction noise and groundborne vibration, and long-term operational increases in noise.
- 5) *Aesthetics*: This Alternative would avoid any potentially significant but mitigable Project nightlighting effects, and any other potential effects on visual character or quality of the site.
- 6) *Cultural Resources*: This Alternative would avoid any potentially significant but mitigable Project effects on the potential to encounter previously undiscovered subsurface archaeological resources, paleontological resources, or human remains.
- 7) *Hazards and Hazardous Materials*: This Alternative would avoid any potential Project impacts associated with the routine transport, use, or disposal of hazardous materials, or potential inadvertent release of hazardous materials into the environment.
- 8) *Land Use and Planning*: This Alternative would avoid any potential Project land use impacts, including the significant but mitigable Project conflict with land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental impact.
- 9) *Agriculture and Forestry Resources, Mineral Resources, Population and Housing, Public Services, Recreation, and Utilities and Service Systems*: This Alternative would either avoid these Project less-than-significant impacts, or, as with the Project, have no impact in these areas.

Alternative 1B: No Project – Reasonably Foreseeable Development Alternative

Geology, Soils and Seismicity

As with Alternative 1A, under Alternative 1B, no winery would be developed on the Project site, and accordingly, all Project-specific environmental impacts to geology, soils and seismicity that would be avoided with Alternative 1A (as discussed above) would also be avoided with Alternative 1B. However, Alternative 1B would result in new impacts to geology, soils and

seismicity with the development of either residential and/or agricultural uses on the Project site. Depending on the siting, size and type/design of new residential and/or agricultural uses on the Project site (see Alternative 1B description of these uses), potential impacts to geology, soils and seismicity would be comparable or greater than those associated with the development of the winery. In particular, agricultural cultivation would affect a larger geographic area on the Project site compared to the proposed Project, require a larger area of grading, and would have the potential to result in greater erosion effects and an associated need for greater erosion control than the Project.

Hydrology and Water Quality

All the Project-specific environmental impacts to hydrology and water quality associated with a winery that would be avoided with Alternative 1A would also be avoided with Alternative 1B. However, Alternative 1B would result in new impacts to hydrology and water quality with the development of either residential and/or agricultural uses on the Project site. Depending on the siting, size and type/design of new residential and/or agricultural uses on the Project site potential impacts to hydrology and water quality would be comparable or greater than those associated with the development of the winery. From a water use perspective, the development of residential uses on the Project site under this Alternative would create a greater annual groundwater demand than the Project, and moreover, the cultivation of agricultural uses on the Project site would create an even greater water demand. In addition, since the proposed Project would not be developed, the Cornell Farms vineyards would also not have the benefit of the supplemental sources of water from the Project-proposed rain water harvesting and treatment of winery process water that would otherwise reduce existing groundwater use for irrigation of the existing Cornell Farms vineyards. Consequently, this Alternative would have the potential for greater groundwater pumping effects on dry season base flows to Mark West Creek and on groundwater levels. Agricultural cultivation under this Alternative would also have the potential to result in stormwater runoff containing greater sedimentation and residuals of agricultural-related pesticides, herbicides and fertilizers at a greater level than Project, resulting in greater surface water quality impacts.

Biological Resources

All the Project-specific environmental impacts to biological resources associated with a winery that would be avoided with Alternative 1A would also be avoided with Alternative 1B. However, Alternative 1B would result in new impacts to biological resources with the development of either residential and/or agricultural uses on the Project site. Depending on the siting, size and type/design of new residential and/or agricultural uses on the Project site potential impacts to biological resources would be comparable or greater than those associated with the development of the winery. In particular, as discussed above, agricultural cultivation would affect a larger geographic area on the Project site and consequently would have the potential to adversely affect more biological habitat, including for special-status plant and animal species, and jurisdictional waters and wetlands, compared to the proposed Project. Furthermore, agricultural uses under this Alternative would use substantially more groundwater, and could result in stormwater runoff

containing greater sedimentation and contaminants than the Project, and correspondingly, would have the potential for greater surface water quality impacts and related effects to aquatic species.

Other Environmental Impacts

All other Project-specific environmental impacts that would be avoided with Alternative 1A (as discussed above) would also be avoided with Alternative 1B. However, under Alternative 1B, new environmental impacts would occur with the development of either residential and/or agricultural uses on the Project site, as discussed below:

- 1) *Transportation and Traffic*: Depending on number of residences and/or type and acreage of agricultural cultivation that could be developed on the Project site under this Alternative, potential transportation impacts would be comparable or greater than those associated with the development of the winery. The vehicle trips generated by development of several housing units for the Project site parcel and/or several acres of agricultural cultivation under this Alternative would exceed the estimated daily vehicle trip generation of the Project winery.³ Furthermore, since the proposed Project would not be developed, the site vicinity roadways would also not benefit from the net reduction in harvest season truck traffic associated with Cornell Farms vineyards that would otherwise occur under the Project. Consequently, this Alternative could have similar or incrementally greater effects on roadway operating conditions and traffic safety compared to the proposed Project.
- 2) *Air Quality, GHG Emissions, and Noise*: Depending on the siting, size and type/design of new residential and/or agricultural uses on the Project site under this Alternative, potential air quality and GHG impacts during construction and operation could be comparable or greater than those associated with the development of the winery. In particular, depending on size, the initial development of agricultural fields (e.g., clearing, grading, etc.) under this Alternative could generate comparable or more air quality/GHG emissions and noise effects than with construction of the proposed Project. During operation, as with the Project, the greatest air quality/GHG emissions and noise effects for agricultural uses would occur during harvest season.
- 3) *Aesthetics*: Depending on the siting, size and type/design of new residential and/or agricultural uses on the Project site under this Alternative, potential aesthetic effects, including effects on scenic views and visual character, and nightlighting effects, could be comparable or greater than those associated with the development of the winery.
- 4) *Cultural Resources*: Depending on the total subsurface area disturbed during construction, potential impacts to cultural resources, including encountering previously undiscovered subsurface archaeological resources, paleontological resources, or human remains could be comparable or greater than those associated with the development of the winery.
- 5) *Hazards and Hazardous Materials*: Depending on the siting, size and type/design of new residential and/or agricultural uses on the Project site under this Alternative, potential effects associated with the use and/or potential release of hazardous materials could be less, comparable or greater than those associated with the development of the winery. As

³ For example, standard single-family homes generate approximately 10 vehicle trips per day per home; and agricultural cultivation (e.g., vineyards) can generate approximately 2 vehicle trips per day per acre. Consequently, the development of multiple homes and/or several acres of agricultural could exceed the vehicle trip generation of the Project (12 -18 vehicles per day, depending on season).

discussed above, operation of new agricultural uses on the Project site would have the potential for greater use of pesticides, herbicides and fertilizers than the proposed Project.

- 6) *Land Use and Planning*: This Alternative assumes the Project site would be developed with one or more of the land uses permitted under the existing zoning for these areas. Depending on the siting, size and design of new residential and/or agricultural uses on the Project site under this Alternative, potential effects associated with land use and planning, including potential Project conflicts with specific plans and policies adopted for the purpose of reducing environmental impacts, could be less, comparable, or greater than those associated with the development of the winery.
- 7) *Agriculture and Forestry Resources*. Since none of the parcels that would be potentially developed under this Alternative contain any Prime Farmland pursuant to the DOC FMMP, this Alternative would not result in the conversion of Prime Farmland to a non-agricultural use. However, depending on the siting and extent of new residential and/or agricultural uses on the Project site under this Alternative, potential effects to loss or conversion of woodland on the Project site could be comparable or greater than the proposed Project.
- 8) *Population and Housing, Public Services, and Utilities and Service Systems*. New residential uses on the site would only create a small increase in population, and the workforce associated with new agricultural uses could create a small increase in demand for housing. Additionally, these uses could increase demand for public services and utilities. Depending on the size and type/design of new residential and/or agricultural uses on the Project site under this Alternative, potential impacts to population and housing, public services, and utilities and service systems could be comparable or greater than the proposed Project.
- 9) *Mineral Resources and Recreation*: As with the Project, no substantial effects to Mineral Resources or Recreation would occur to mineral resources and recreation.

Alternative 2A: No Winery Dry Season Groundwater Pumping / Additional Rain Water Harvesting

Geology, Soils and Seismicity

This Alternative would require an increase to the on-site potable water storage on the 245 Wappo Road property; or elsewhere on the Cornell Farms property (which would also require additional potable water conveyance utilities). This Alternative would also increase rain water harvesting on-site by retrofitting the existing residence on the 420 Wappo Road property, and store the additional harvested water in proximity to the vineyards. The provision of increased on-site potable water and rain water storage facilities and associated conveyance utilities under this Alternative would result in an incrementally larger Project development footprint. However, any additional potential geologic, soil and seismic considerations associated with the installation of additional site facilities and with an incrementally larger development footprint would be comparable in nature to those that would be encountered for the proposed Project, and would be similarly less-than-significant with proper siting, compliance with the California Building Code (CBC) and those requirements prescribed by the General Construction Permit and Sonoma County, and implementation of applicable standard geotechnical mitigation measures.

Hydrology and Water Quality

Under this Alternative, the winery would avoid the Project-proposed winery groundwater pumping during the dry season months of April through July, and would instead pump and store an additional estimated 32,600 gallons of groundwater over the five wet season months of November through March (which would otherwise occur under the Project from April through July).

This Alternative would also harvest and store additional rain water beyond that proposed by the Project. This would be achieved by retrofitting the roof of the existing 420 Wappo Road house on the Cornell Farms property, and storing the harvested rainwater in proximity to the existing Cornell Farms vineyards. This Alternative would provide up to 70,000 gallons of additional harvested rain water annually to supplement irrigation of the existing Cornell Farms vineyards. This would be in addition to the Project-proposed use of rainwater harvested at the winery site to irrigate the winery landscaping and supplement irrigation of the existing Cornell Farms vineyards, and the use of treated winery process water to also supplement irrigation of the existing Cornell Farms vineyards.

On an annual basis, this Alternative would further reduce (by 70,000 gallons) the annual groundwater pumped at Cornell Farms compared to both existing and Project conditions, and accordingly, further reduce the annual demand on the aquifer. Furthermore, this Alternative would result in a further decrease in total groundwater pumped at Cornell Farms over the dry season, including the critical dry season months of August through October, compared to both existing and Project conditions. As a result, this Alternative would further ensure dry season baseflows to Mark West Creek would not be diminished by the winery.

Since no dry season groundwater pumping for the winery would occur, this Alternative would result in an additional average groundwater pumping of approximately 6,500 gallons per wet season month for the winery, or less than 250 gallons per wet season day increase, above that proposed by the Project. This would amount to an average of less than 30 minutes of additional groundwater pumping per day over Project conditions over the course of the wet season. This incremental increase in wet season groundwater pumping compared to the Project would be well within the maximum pumping condition analyzed for the Project (see Section IV.C, Hydrology and Water Quality). As a result, the increased wet season groundwater pumping under this Alternative would similarly not adversely impact neighboring groundwater supply wells or the local surface water sources.

The harvesting of up to 70,000 gallons of additional rain water annually on-site compared to the Project would further reduce the annual surface water available to the Upper Mark West Watershed. However, as with the Project, this minor additional surface flow would be collected only during the rainy season, and the incremental increase in rain water collection that would occur under this Alternative would similarly not represent an adverse effect on the watershed.

Finally, any potential hydrologic and water quality effects that would be associated with a accommodating the additional facilities required on-site and an incrementally larger development

footprint under this Alternative would be comparable in nature to those that would be encountered for the proposed Project, and would be similarly less-than-significant with proper siting, compliance requirements prescribed by the General Construction Permit and Sonoma County.

Biological Resources

As discussed, above, this Alternative would further ensure dry season baseflows to Mark West Creek would not be diminished by the winery, and as with the Project, would not decrease the habitat availability for juvenile coho salmon and steelhead. Furthermore, as with the Project, the additional proposed rain water harvesting under this Alternative would not result in a noticeable reduction in surface flows in Mark West Creek during the rainy season, and accordingly, this Alternative's impact of rain water harvesting to a decrease of habitat availability for river lamprey, coho salmon, and steelhead would be less than significant. Furthermore, all mitigation measures identified for the Project to minimize effects to aquatic species during construction would apply to this Alternative.

Any potential biological effects that would be associated with accommodating the additional facilities required on-site and an incrementally larger development footprint under this Alternative would be comparable in nature to those that would be encountered for the proposed Project, and would be similarly less-than-significant with proper siting, compliance with requirements prescribed by the General Construction Permit and Sonoma County; and implementation of biological mitigation measures identified for the Project.

Other Environmental Impacts

- 1) *Transportation and Traffic*: There could be a slight increase in construction vehicle trips associated with the transport of materials and equipment associated with the additional on-site facilities required for this Alternative compared to the Project, although such construction-related transportation effects would similarly be less than significant. Otherwise, all other construction and operational transportation and traffic effects of this Alternative would be comparable to those of the Project.
- 2) *Air Quality, GHG Emissions, and Noise*: There could be a small increase in construction-related air quality and GHG emissions and noise associated with transport and installation of the additional on-site facilities required under this alternative compared to the Project. There could also be an incremental increase in operational emissions and/or noise associated with the operating the additional on-site facilities (e.g., pumps to convey water etc.) required under this alternative. However, any potential increase in construction and operational air quality, GHG, and noise effects would be similarly less than significant.
- 3) *Aesthetics*: The installation of additional storage facilities on-site would represent additional built uses that, depending on siting, could be visible from certain off-site locations. However, given the existing distance, topographic and vegetative buffers available between the Project site and off-site land uses, potential aesthetic effects, including effects on scenic views and visual character, and nightlighting effects, would not be substantially greater than the Project, and would be similarly less than significant with implementation of Project mitigation measures for aesthetics.

- 4) *Cultural Resources*: An incrementally larger development footprint that would occur under this Alternative could result in a slightly larger area of ground disturbance, and therefore, an associated slight increase in potential for encountering subsurface cultural resources during construction. Such potential effects would be similarly less than significant with implementation of Project mitigation measures for cultural resources.
- 5) *Land Use and Planning*: Potential environmental effects for this Alternative would be similar for the proposed Project, and would be similarly less than significant with implementation of Project land use mitigation measures.
- 6) *Agriculture and Forestry Resources, Hazards and Hazardous Materials, Population and Housing, Mineral Resources, Public Services, Recreation and Utilities and Service Systems*. Potential environmental effects for this Alternative would be similar to those for the proposed Project, and less than significant.

Alternative 2B: Conservation Easement(s) on Cornell Farms and/or Adjacent Property

Hydrology and Water Quality

Under this Alternative, all aspects of the proposed winery would be identical to the Project, including winery development footprint, and proposed winery facilities and operations. However, this Alternative would further offset Project winery water use by placing a Conservation Easement on the Cornell Farms 100 Wappo Road property and/or the Cornell Farms newly-acquired 115 Wappo Road property. Specifically, under this alternative, the following would occur on the 100 Wappo Road and/or 115 Wappo Road properties and formalized in a Conservation Easement(s): demolish the residence(s) and potentially other structures, and relinquish in perpetuity the right to install vineyards, or build any new structure (for which a building permit is required); riparian rights to withdraw water directly from Mark West Creek; and the right to use water from the on-site surface waters or wells (other than fire protection).

The 100 and 115 Wappo Road properties each contain a residence and groundwater well, in addition to other miscellaneous structures. A standard three-bedroom house uses approximately 450 gallons of water per day⁴ year-round, which amounts to an estimated 164,000 gallons per year. Consequently, the current groundwater use for the house on either the 100 or the 115 Wappo Road property is greater than the estimated Project winery groundwater demand of 135,550 gallons per year. Relinquishing in perpetuity the right to install vineyards on one or both properties would further offset any potential future water demand that could be associated with that use.

Consequently, on an annual basis, this Alternative would further reduce (by between 164,000 and 328,000 gallons) the annual groundwater pumped at Cornell Farms and/or the adjacent property compared to both existing and Project conditions, and accordingly, further reduce the annual demand on the aquifer. Furthermore, this Alternative would result in a further decrease in total groundwater pumped at Cornell Farms and/or adjacent property over the dry season, including

⁴ Assuming 150 gallons per day per bedroom.

during the critical dry season months, compared to both existing and Project conditions. As a result, this Alternative would further ensure dry season baseflows to Mark West Creek would not be diminished by the winery. The avoidance of groundwater pumping on the 100 and/or 115 Wappo Road properties would also reduce any potential effects of existing groundwater pumping on those properties to neighboring groundwater supply wells or the local surface water sources.

The demolishing of the residence(s) and potentially other structures on the 100 and/or 115 Wappo Road properties would incrementally reduce the existing impervious surfaces on those properties, and consequently would incrementally increase surface area for rain water infiltration over existing conditions. The permanent removal of existing residential uses and activities on these properties that may currently contribute typical residential-related contaminants to surface water runoff or groundwater (e.g., oil and greases, solvents, etc.) would incrementally reduce potential adverse water quality effects to surface and groundwater over existing conditions.

Biological Resources

The 100 and 115 Wappo Road properties are located within an area designated in the *Sonoma County General Plan 2020* as a Biotic Habitat Area - Sensitive Natural Community Area. The General Plan recognizes Biotic Habitat Areas as areas containing habitats whose locations are known and considered important for protection. These properties are also zoned with a Biotic Resources combining district overlay; the purpose of which is to protect biotic resource communities including critical habitat areas and riparian corridors for their habitat and environmental value. Sensitive natural communities as defined by the General Plan that are known to exist on the 100 Wappo Road property include freshwater marsh, riparian woodland, Douglas fir forest, redwood forest and coast oak woodland; and on the 115 Wappo Road includes Douglas fir forest and coast oak woodland. Consequently, the creation of a conservation easement would be compatible with and further the County's goal for protecting the natural resources on these properties.

In addition, by further reducing groundwater use on the Cornell Farms property and/or adjacent property, this Alternative would further ensure dry season baseflows to Mark West Creek would not be diminished by the winery, and as with the Project, would not decrease the habitat availability for juvenile coho salmon and steelhead in Mark West Creek.

Other Environmental Impacts

- 1) *Air Quality, GHGs, Hazards and Hazardous Materials, Noise, Public Services, Transportation and Traffic, and Utilities and Service Systems*: This Alternative would eliminate any potential environmental effects (albeit less than significant) associated with the existing residential uses on the 100 and/or 115 Wappo Road properties, including, but not limited to, traffic, air and GHG emissions, noise, and need for public services and utilities. Otherwise, potential environmental effects of this Alternative in these issue areas would be comparable to those of the Project, and less than significant.
- 2) *Aesthetics*: Both the 100 and 115 Wappo Road properties are located adjacent to St. Helena Road, designated as a scenic corridor in the *Sonoma County General Plan 2020*. The

creation of a conservation easement on the 100 and/or 115 Wappo Road properties under this Alternative would eliminate any potential aesthetic environmental effects (albeit less than significant) associated with built structures on these properties. Otherwise, potential aesthetic effects of this Alternative would be similar to those of the Project, and would be less than significant with implementation of the Project mitigation measures for aesthetics.

- 3) *Land Use and Planning*: The creation of a conservation easement on the 100 and/or 115 Wappo Road properties under this Alternative would be compatible with the existing General Plan and zoning designations for these properties and would not result in any adverse land use effects on surrounding properties. Otherwise, potential land use and planning effects of this Alternative would be similar to those of the Project, and less than significant with implementation of the Project's land use mitigation measures.
- 4) *Population and Housing*: Given the small number of units that would be demolished and the availability of other housing in the County, the demolition of existing houses on the 100 and/or 115 Wappo Road properties and displacement of the occupants of these houses that would occur under this Alternative would not be considered a substantial displacement of housing or people. Otherwise, potential population and housing effects of this Alternative would be comparable to those of the Project, and less than significant.
- 5) *Agriculture and Forestry Resources, Cultural Resources, Mineral Resources, and Recreation*: Potential environmental effects for this Alternative would be similar to those for the proposed Project, and would be less than significant with implementation of the Project mitigation measures for cultural resources.

Alternative 3: Reduced Production / Reduced Footprint Alternative

Geology, Soils and Seismicity

It is assumed that by reducing the maximum production capacity of the winery, some reduction in the Project development footprint (e.g., wine buildings and wine cave size) would be possible. An incremental reduction in the Project development footprint would not avoid the potentially significant (but mitigable) impacts associated with the Project development on unstable soils and with erosion.

Potential geologic, soil and seismic considerations associated with an incrementally smaller development footprint would be less or comparable in nature to those that would be encountered for the proposed Project, and would be similarly less-than-significant with proper siting, compliance with the CBC and those requirements prescribed by the General Construction Permit and Sonoma County, and implementation of applicable standard geotechnical mitigation measures.

Hydrology and Water Quality

Under this Alternative, the winery would have a reduced maximum annual production capacity (reduced from a maximum of 10,000 cases to 8,000 cases). As a result, it is assumed proportionally less groundwater would be extracted annually for wine processing operations

(approximately 76,800 gal/yr would be extracted under this Alternative, versus 93,000 gal/yr under the Project). The number of daily visitors and annual special events would be identical to the Project, and consequently, this Alternative would have roughly the same groundwater use for domestic water purposes as the Project (39,550 gal/yr). Therefore, the total winery estimated groundwater demand for this Alternative would therefore be approximately 116,350 gal/yr (versus 135,550 gal/yr under the Project).

With some reduction in the Project development footprint under this Alternative, there could be an incremental reduction in the rain water harvesting collection surface area for the winery, however, the total annual rain water that could be stored under this Alternative and available for use in irrigating the winery landscaping and supplementing irrigation of the Cornell Farms vineyards would be similar to the Project under all rainfall conditions. With respect to the amount of treated winery process water that would be available under this Alternative for use as supplemental water for vineyard irrigation, the annual volume would be similar to that amount of water used for wine processing.

Under this Alternative, the Project supply well would pump less groundwater annually than under existing conditions. However, the net reduction in the existing annual groundwater demand on the Project supply well would be almost identical to the net reduction that would occur under the Project. Thus, this Alternative's effect on reducing the annual groundwater demand on the aquifer, including during the dry season, would be similar to the Project. Consequently, similar to the Project, this Alternative would not further diminish dry season baseflow to Mark West Creek. Similarly, groundwater pumping effects of this Alternative on neighboring groundwater supply wells or the local surface water sources would be similar to the Project, and less than significant.

The smaller development footprint assumed under this Alternative would incrementally reduce the amount of impervious area on-site compared to the Project. When considering any small reduction in impervious area that would occur under this Alternative along with the proposed rain water harvesting, the net effect of this Alternative on reducing the availability surface water availability to the watershed would be similar to the Project, and accordingly, less than significant.

Biological Resources

As discussed above, this Alternative, similar to the Project, would not further diminish dry season baseflow to Mark West Creek, similar to the Project. Accordingly, similar to the Project, this Alternative would not decrease the habitat availability for juvenile coho salmon and steelhead. Furthermore, as with the Project, the additional proposed rain water harvesting under this Alternative would not result in a noticeable reduction in surface flows in Mark West Creek during the rainy season, and accordingly, this Alternative's impact of rain water harvesting to a decrease of habitat availability for river lamprey, coho salmon, and steelhead would be less than significant. Furthermore, all mitigation measures identified for the Project to minimize effects to aquatic species during construction would apply to this Alternative.

An incrementally smaller development footprint that would occur under this Alternative could result in incrementally less impacts to sensitive biological habitat and special-status plant species within the project footprint, but would not likely avoid any potentially significant (but mitigable) impacts. As with the Project, proper siting, compliance with requirements prescribed by the General Construction Permit and Sonoma County; and implementation of biological mitigation measures identified for the Project would ensure all significant impacts to biological resources under this Alternative would be less than significant.

Other Environmental Impacts

- 1) *Transportation and Traffic*: There could be a slight decrease in construction vehicle trips associated with the transport of materials and equipment associated with the incrementally smaller facilities and overall construction for this Alternative compared to the Project, and such construction-related transportation effects would similarly be less than significant. In addition, given the lower winery production, there would also be an incremental reduction in the transport of grapes imported to the project site for processing. Otherwise, all other construction and operational transportation and traffic effects of this Alternative would be comparable to those of the Project.
- 2) *Air Quality, GHG Emissions, and Noise*: There could be a slight decrease in construction-related air quality and GHG emissions and noise associated with construction of smaller facilities under this alternative compared to the Project. In addition, given the lower winery production, there would also be an incremental reduction in operational emissions and noise under this alternative. As with the Project, potential increases in construction and operational air quality, GHG, and noise effects under this Alternative would similarly be less than significant.
- 3) *Aesthetics*: There could be a slight decrease in the amount of land alteration required under this Alternative compared to the Project. In any case, the existing distance, topographic and vegetative buffers available between the Project site and off-site land uses, potential aesthetic effects, including effects on scenic views and visual character, and nightlighting effects, would similarly be less than significant with implementation of Project mitigation measures for aesthetics.
- 4) *Cultural Resources*: An incrementally smaller development footprint that would occur under this Alternative could result in a slightly smaller area of ground disturbance, and therefore, an associated slight decrease in potential for encountering subsurface cultural resources during construction. As with the Project, such potential effects would similarly be less than significant with implementation of Project mitigation measures for cultural resources.
- 5) *Land Use and Planning*: Potential environmental effects for this Alternative would be similar for the proposed Project, and would be similarly less than significant with implementation of Project land use mitigation measures.
- 6) *Agriculture and Forestry Resources, Hazards and Hazardous Materials, Population and Housing, Mineral Resources, Public Services, Recreation and Utilities and Service Systems*. Potential environmental effects for this Alternative would be similar to those for the proposed Project, and less than significant.

F. Environmentally Superior Alternative

Of the alternatives assessed in this EIR, the alternative with the least environmental impact is the No Project – No Subsequent Development Alternative. This alternative would avoid all significant environmental impacts that would occur under the proposed Project. It is important to note, however, that this Alternative, similar to existing conditions, would result in a greater groundwater demand at Cornell Farms property compared to that which would occur under the proposed Project. Nevertheless, the No Project – No Subsequent Development Alternative would not meet any of the project sponsor’s objectives.

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 2B – Conservation Easement(s) on Cornell Farms and/or Adjacent Property is determined to be the environmentally superior alternative. This Alternative would include all the water consumption reduction and water conservation elements of the proposed Project. In addition, the Conservation Easement(s) that would occur under this Alternative would provide substantial further environmental benefits on the Cornell Farms and/or adjacent property. Specifically, the Conservation Easement(s) would provide permanent conservation protection of land designated by the General Plan as a Sensitive Natural Community Area, and zoned as Biotic Resources, and known to contain sensitive natural communities considered important for the County for protection; this would outweigh any potential site-specific biological benefit that would be gained by a reduced Project footprint in Alternative 3. Furthermore, Alternative 2B provides more groundwater use reduction than either Alternative 2A or Alternative 3, without requiring any additional water storage, conveyance and/or treatment facilities and any associated larger development footprint (as would occur under Alternative 2A), beyond that proposed under the Project.

References

(The references cited below are available at the Sonoma County Permit and Resource Management Department, 2550 Ventura Avenue, Santa Rosa, California, unless otherwise specified.)

Sonoma County, *Sonoma County General Plan 2020*, adopted September 2008.

Sonoma County, *Zoning Regulations – Chapter 26*, as amended 2012.

CHAPTER VI

Impact Overview

A. Significant and Unavoidable Environmental Impacts

The proposed Project, if implemented, could result in significant adverse environmental impacts. However, project design features proposed as part of the Project, and mitigation measures identified by this EIR, would avoid or reduce all impacts to a less-than-significant level. Consequently, no significant and unavoidable environmental impacts are identified in this EIR.

B. Cumulative Impacts

CEQA defines cumulative impacts as two or more individual impacts which, when considered together, are substantial or which compound or increase other environmental impacts. The cumulative analysis is intended to describe the “incremental impact of the project when added to other, closely related past, present, or reasonably foreseeable future projects” that can result from “individually minor but collectively significant projects taking place over a period of time (*CEQA Guidelines* Section 15355).

The geographic scope of area and time horizon considered for cumulative impacts addressed in the Draft EIR was dictated by the specific type and nature of impact being considered. For instance, Project cumulative effects on hydrology and water quality were considered in the context of the Upper Mark West watershed, whereas the cumulative context for potential geologic, seismic and soil impacts are localized. When considering Project contribution to cumulative air quality impacts on the other hand, the geographic scope of area is the Bay Area Air Basin under the jurisdiction of the Bay Area Air Quality Management District. As discussed elsewhere in this EIR, there are no other substantial reasonably foreseeable future projects proposed in the Project site vicinity.

Each topical analysis presented in Chapter IV, Environmental Setting, Impacts, and Mitigation Measures, of this report considers possible cumulative impacts related to the discussion, as applicable, and identifies circumstances in which the project would contribute to significant cumulative impacts.

C. Growth Inducing Impacts

Section 15126.2(d) of the *CEQA Guidelines* requires that an EIR discuss the ways in which a 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 that would remove obstacles to population growth.

Development of the Project would generate construction-related employment during the construction phases of project. As discussed in Chapter III, Project Description, there would be an average of approximately 13 construction workers on-site throughout the construction period, with the peak period including up to 27 workers on-site. The Project's labor force would be expected to be primarily local. Given the number of workers with applicable skills who reside in Sonoma County and environs, it is unlikely that a substantial amount of construction workers would relocate to the County to work on the construction of the proposed Project. Thus, the project would not be considered growth-inducing from a short-term construction employment perspective.

As discussed in Chapter III, the new employment associated with operation of the Project would be relatively limited, estimated at three full-time employees year round, with up to four additional employees during harvest season. This level of long-term employment would also not be expected to induce growth.

As discussed in Chapter III, the proposed Project would provide a number of infrastructure improvements, including groundwater storage, rainwater harvesting and storage, winery process water treatment and storage facilities, domestic wastewater treatment and disposal facilities, and storm drainage improvements. These proposed utilities infrastructure improvements would all be located on-site, and would be sized to adequately serve the proposed Project uses and existing Cornell Farms vineyards, with limited future expansion potential. Similarly, the proposed improvements to Wappo Road are designed to provide adequate emergency access and improve drainage, and would not increase traffic volume capacity on this roadway.

D. Effects Found not to Be Significant

The environmental effects of the proposed project are identified and discussed in detail in Chapter IV, Environmental Setting, Impacts, and Mitigation Measures, and are summarized in the Chapter II, Summary in this EIR. All identified significant environmental effects of the project would be less than significant with mitigation.

CHAPTER VII

Report Preparers

A. EIR Preparers

Report Authors

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APPENDIX A

Notice of Preparation

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**COUNTY OF SONOMA PERMIT AND RESOURCE
MANAGEMENT DEPARTMENT**

2550 Ventura Avenue, Santa Rosa, CA 95403-2829
(707) 565-1900 FAX (707) 565-8358

***NOTICE OF PREPARATION OF A
DRAFT ENVIRONMENTAL IMPACT REPORT***

Project Title: Henry Cornell Winery

Project Applicant: Guy Davis, representing Cornell Farms, LLC

The Sonoma County Permit and Resource Management Department has received an application from Guy Davis, representing Cornell Farms, LLC for the proposed Henry Cornell Winery. Sonoma County will be the lead agency and will prepare an Environmental Impact Report (EIR) for the above project. We are asking for your views regarding the scope of environmental issues that should be addressed in the EIR.

The Project Description is contained in the attached materials for your consideration. If you wish to comment on the environmental issues that should be addressed in the EIR, please send written comments to David Hardy 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 will need to use 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.

Date: February 27, 2012

David Hardy
Supervising Planner
Telephone (707) 565-1924
Fax (707) 565-1103

Attachments: Project Description

PROJECT DESCRIPTION
for the
HENRY CORNELL WINERY PROJECT

Project Location

The project site is located at 100, 245, 420, 500 and 560 Wappo Road in eastern Sonoma County [Assessor's Parcel Numbers (APNs) 028-250-007, 028-260-041, 028-260-047, 028-260-023 and 028-260-025] approximately 1½ miles west of the Sonoma-Napa County line (see Figure 1). The property is owned by Cornell Farms, LLC (Cornell Farms). Including the five project site parcels, Cornell Farms owns a total of seven contiguous legal parcels in the vicinity.

Site Description

245 Wappo Road (APN 028-260-041). The majority of proposed winery development would be located in the southeast portion of this 40-acre parcel. The site of the winery is located on an undeveloped knoll east of and adjacent to Wappo Road. Wappo Road provides primary vehicular access to the site from St. Helena Road, and is private within the Cornell Farms property. Other existing site improvements elsewhere on this parcel include a residence, small vineyard, leach field and a water well.

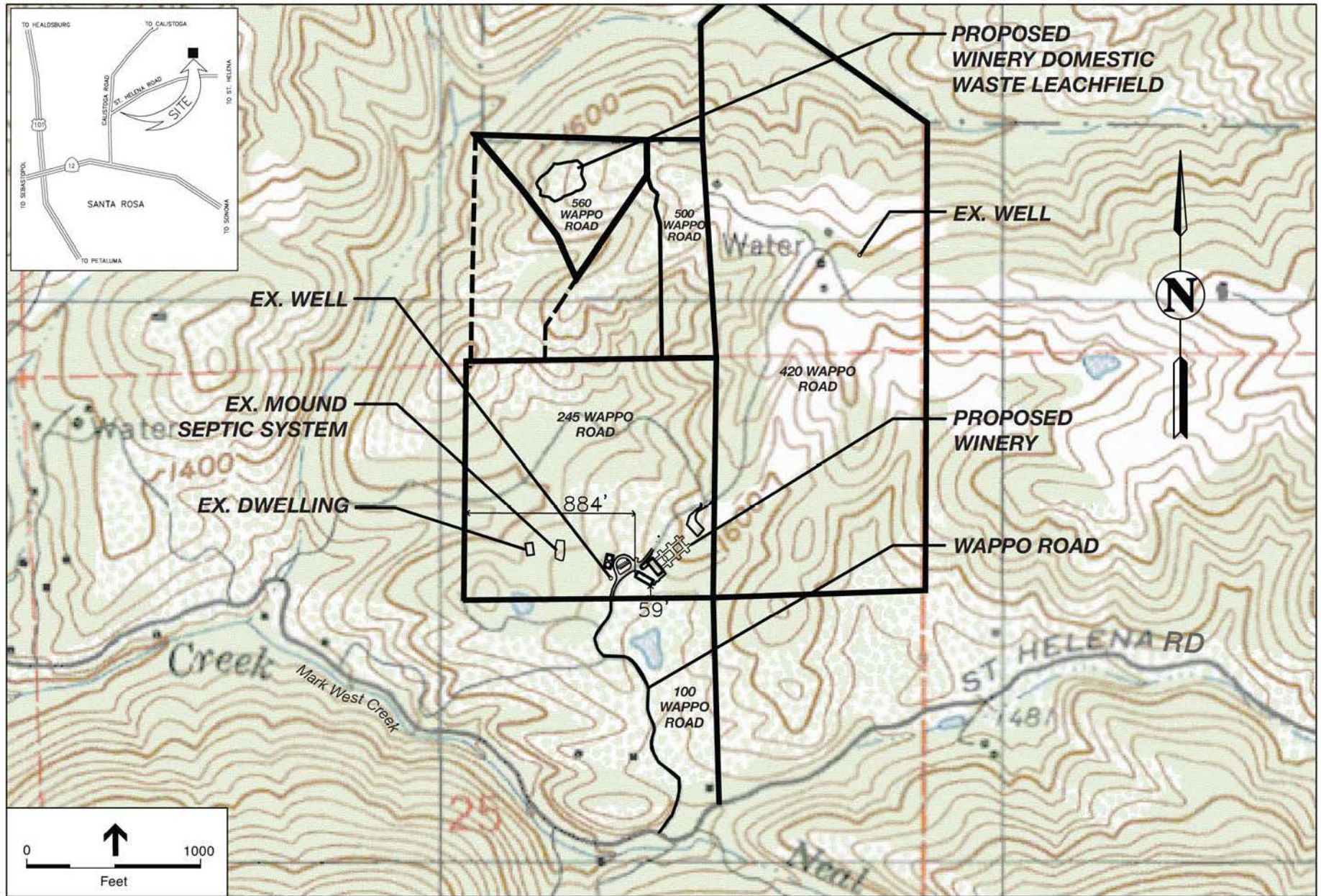
560 Wappo Road (APN 028-260-025). This 7.2-acre parcel is among the northernmost parcels of the Cornell holdings. The parcel is largely undeveloped except for the access road. The winery's proposed leachfield would be located within a stand of Douglas fir and oak trees on this property.

420 and 500 Wappo Road (APNs 028-260-047 and 028-260-025). A proposed domestic wastewater pipeline would be installed in Wappo Road on these parcels between the proposed winery and leachfield. The 420 Wappo Road property (94.5 acres) contains much of the Cornell Farms vineyards, as well as several homes, water wells and septic system. The 500 Wappo Road property (6.5 acres) is largely undeveloped, with the exception of the access road and several above-ground water storage tanks.

100 Wappo Road (APN 028-250-007). This 15-acre parcel is the southernmost parcel of the Cornell holdings. A number of proposed improvements to Wappo Road would occur on this property as part of the project. This property contains a residence, spring-fed pond, water well and septic system.

Proposed Project Characteristics

The proposed winery is presented in Figure 2. The proposed winery would have a maximum annual production capacity of 10,000 cases. The project would include new building development; a wine cave; access and parking improvements; various project-related infrastructure improvements for stormwater management, including rainwater harvesting and storage, wastewater treatment, conveyance and disposal; and landscaping improvements. Existing vineyards on the Cornell Farms property at 420 Wappo Road would provide majority of the grapes for the wine to be produced at the winery. The vineyard and its maintenance and operation are not part of the project.



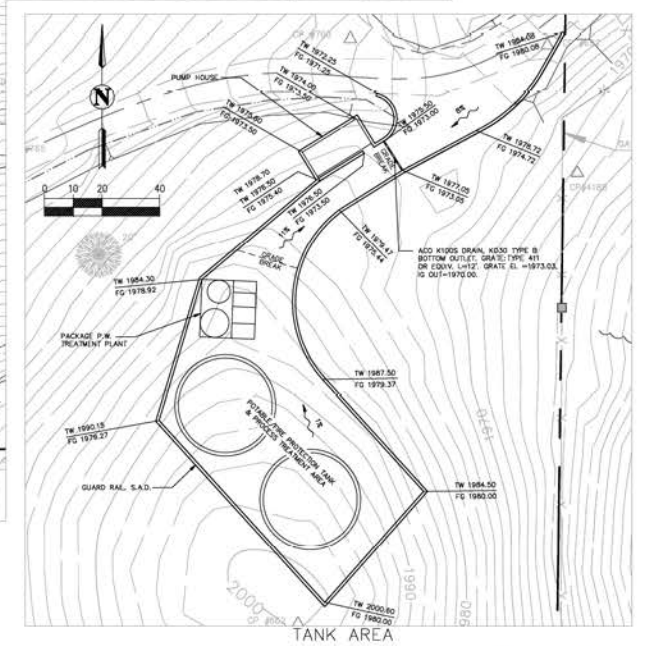
SOURCE: Atterbury & Associates, 2011

Henry Cornell Winery . 211996

Figure 1
Project Location



LEGEND
 X - TREE TO BE REMOVED



SOURCE: Atterbury & Associates, 2011

Henry Cornell Winery . 211996

Figure 2
Proposed Winery

Typical hours of operation of the winery would be weekdays, 8:00 a.m. to 5:00 p.m., with wine tasting by appointment only, and limited to a maximum of 15 guests at a time. No more than 10 special events would be allowed per year at the winery, with a maximum of ten guests per event, in addition to the private tasting events. All events would end by 10:00 p.m. The winery would require three full-time employees, with up to four additional employees during harvest season.

Winery Buildings and Cave

The winery would include construction of two single-story buildings just east of Wappo Road totaling 6,700 square feet (sf), including a winery production building and winery support building. The 3,500 sf winery production building would house fermentation tanks and crush facilities. The 3,200 sf winery support building would include the winemaker's office, laboratory, mechanical equipment, and space for bottling and case good storage. These two buildings would be located on either side of a concrete delivery apron that would be used for receiving fruit, and provide one disabled parking space. The primary parking area would be located just west of Wappo Road, consisting of seven parking spaces surrounded by a driveway.

A 10,200 sf cave would be constructed within the knoll, with the cave portals proposed to be adjacent to the winery production building. The cave would be used for wine barrel storage, and would contain a wine tasting room. It is anticipated that approximately 15,400 cubic yards (cy) of cut and 1,400 cy of fill would be required to terrace the project site for the proposed buildings and tank pads, excavate the cave, and roadway grading. The proposed winery production building would be recessed into the hillside, necessitating a 20-foot high cut to be retained by the adjacent soil nail cave portal. Retaining walls are proposed on the southeast side of the winery buildings, along a portion of Wappo Road and parking area, and at the proposed tank sites. Excess earthwork would be moved off-site to a permitted disposal site.

Access and Parking

Vehicular access to the winery would be provided via Wappo Road. Wappo Road would be improved from St. Helena Road to the proposed winery parking area to comply with County fire safe standards (see also discussion of drainage improvements for Wappo Road, below). The primary parking area for the winery would be located just west of Wappo Road across, consisting of seven parking spaces surrounded by a driveway. The delivery apron located between the winery buildings would provide an additional parking space.

Water, Wastewater and Stormwater Improvements

Groundwater from an existing well on a ridge located northeast of the winery site (at 420 Wappo Road) would supply water for the winery production. The project also proposes to collect runoff water from project buildings during the rainy season, to be stored in two proposed on-site water storage tanks west of Wappo Road (total 140,000 gallon capacity), and used to establish native species landscape during the dry season. Once those plants are established, the rainwater would be used to irrigate the adjacent vineyard during the dry season, instead of drawing that amount of water from the existing well (which serves the vineyard and would serve the proposed winery). In addition, an area approximately 300 feet northeast of the proposed winery buildings would contain a water storage tank for potable water and fire protection, and an aerobic treatment system for winery process wastewater. The treated processed waste water would be stored in a water tank at this site for irrigation of the Cornell Farms vineyards. Pipes would be installed beneath Wappo Road to convey water and other liquid material to and from the storage tanks.

Domestic wastewater generated at the winery would be collected, clarified and treated, and then disposed at a new leach field proposed at the 560 Wappo Road property. Domestic wastewater would be conveyed from the treatment site to the leach field via an approximate 3,000 foot long pipe installed beneath Wappo Road.

Rain gardens and vegetated buffers would be installed along Wappo Road and other locations within the project site to collect and treat stormwater runoff (see Figure 3). In addition, crushed rock shoulders would be installed at locations along Wappo Road for stormwater energy dissipation.

Landscaping

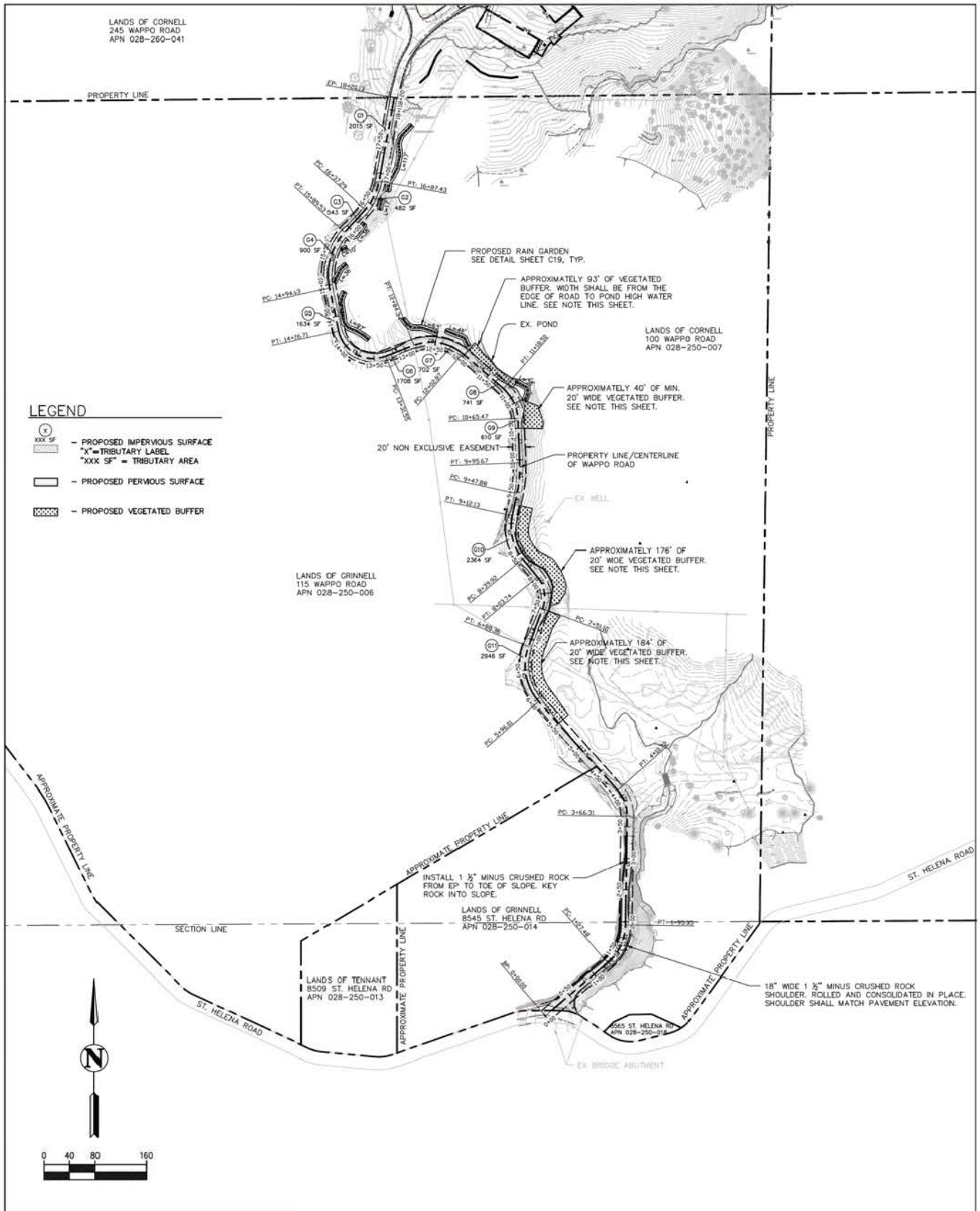
The preliminary landscaping plan proposes a variety of new trees (e.g., firs, oaks madrones and maples), shrubs and groundcover (e.g., manzanita, ceanothus, and herbs) to be planted throughout the project site for aesthetics and erosion control, and offset effects to the existing trees that would be affected from the construction of the winery.

Areas of Probable Impact

The EIR will analyze the potential environmental impacts resulting from implementation of the proposed project, and identify potential mitigation measures, as appropriate, in the following areas:

- Aesthetics
- Agriculture Resources;
- Air Quality;
- Biological Resources;
- Cultural Resources;
- Geology and Soils;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning;
- Mineral Resources;
- Noise;
- Population and Housing;
- Public Services;
- Recreation;
- Transportation and Traffic; and
- Utilities and Service Systems.

Comments and suggestions regarding the scope of the analysis and alternatives are welcome.



SOURCE: Atterbury & Associates, 2011

Henry Cornell Winery . 211996

Figure 3
Proposed Wappo Road Improvements

APPENDIX B

Mitigated Negative Declaration

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Mitigated Negative Declaration

Sonoma County Permit and Resource Management Department
2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 565-1900 FAX (707) 565-1103

Publication Date: August 9, 2010

Adoption Date:

State Clearinghouse:

This statement and attachments constitute the **Negative Declaration** as proposed for or adopted by the Sonoma County decision-making body for the project described below.

File No.: UPE07-0008
Planner: David Hardy
Project Name: Cornell Winery UPE07-0008

Project Description:

This project is a revision of a winery project at 245 Wappo Road originally applied for in 2007. A prior application at 420 Wappo Road filed in 2003 was withdrawn when the application was made for the site at 245 Wappo. The applicant's Proposal Statement dated May 18, 2010, which was submitted to the County on May 20, 2010, is the basis for this subsequent review, along with the Preliminary Grading Plan dated May 14, 2010, prepared by Atterbury and Associates; the Site Plan, Floor Plan, and Elevations dated April 29, 2010, prepared by Backen Gillam architects; the Summary of the Proposed Water Use and Mitigation prepared by Thomas W. Atterbury, dated June 3, 2010; and the Preliminary Landscape Plan dated June 15, 2010 prepared by Prunuske Chatham Inc. The applicant's request is for a winery with a maximum annual production capacity of 10,000 cases on a 40-acre parcel, one of seven contiguous legal parcels owned by the applicant. The May 18, 2010 proposal includes construction of two single-story buildings totaling approximately 6,700 square feet (SF) and a 10,200 square foot cave for barrel storage. Substantial changes to the project from the Oct. 8, 2009 Mitigated Negative Declaration include relocation of the buildings from a site west of Wappo Road to the current location on the east side of Wappo Road, a reduction in the physical size of the winery and hospitality facilities, and additional water harvesting storage tanks; in most other respects, the project is substantially the same as that previously considered in the Mitigated Negative Declaration dated October 8, 2009.

Wine tasting would occur in a room within the wine cave. Winery production would take place within the 3,500 SF "production building" that would house fermentation tanks and crush facilities, and that abuts the cave portals used for barrel storage. The other "winery support" building would be used for the winemaker's office, laboratory, mechanical equipment, and space for bottling and case good storage. The two buildings would be on either side of a paved delivery apron that would be used for receiving fruit and also for additional parking.

The project would require approximately 13,515 cubic yards of cut and 1,289 yards of onsite fill to terrace the site for the proposed buildings and excavate the cave. The plans indicate space for approximately seven parking spaces surrounded by a driveway and another parking space next to the office/support building, for a total of eight spaces, with ample pad space and driveway size for more. A new water tank would be constructed for fire protection and domestic use on a pad north of the winery buildings, and the

same pad would also be used for winery wastewater processing. The winery production building would be recessed into the hillside, creating an approximately 20-foot high cut to be retained by a soil nail cave portal that would not be part of the building. Retaining walls would also be needed along a portion of Wappo Road and the southeastern side of the winery. The tank pad for water and wastewater treatment may also require retaining walls. The building and caves would contain all winery operations and equipment. Excess soils not re-used at the winery site would be disposed offsite at a location approved to receive them.

Tasting would be by appointment only. According to the proposal statement, a maximum of 15 visitors at a time would be hosted. There would be three full time employees, with four additional employees to help during harvest and crush. Crushing operations would take place outside on a crush pad under a canopy or indoors under a roof. Normal hours of operation (non-crush) would be 8:00 a.m. to 5:00 p.m., Monday through Friday. The process wastewater would be treated using a small patented aerobic treatment system and stored in a water tank for disposal by means of drip irrigation in the Cornell vineyards. Domestic wastewater from staff and customers would be processed using a conventional septic system with disposal in a leach field located at 560 Wappo Road. Plumbing for the wastewater would be placed in Wappo Road; the line would extend 3,000 feet from the winery treatment site. The preliminary landscape plan shows two rainwater storage tanks with a total 140,000 gallon capacity intended to catch roof run-off water during the rainy season for landscape irrigation throughout the year. These tanks are located approximately 100 feet west of the winery buildings, next to the parking lot on the west side of Wappo Road. The existing wells on the ridge to the northeast would supply the winery with water. The wells are located approximately 1,600 feet east of and 120 feet higher in elevation than the septic leach field. Stems and pomace would be composted and disced back into the vineyard and not burned.

Since the application was filed in 2007, the applicant/owner acquired the adjacent property at 100 Wappo Road, APN 028-250-007. The 15-acre property has a General Plan designation of Rural Residential, 15-acre density, and a zoning designation of RR (Rural Residential), B6-15 acre density, BR (Biotic Resource), and SR (Scenic Resource). Located on the north bank of Mark West Creek, the property abuts St. Helena Road, and formerly had a St. Helena Road address. The property contains a 1,900 square foot, three-bedroom house and a spring-fed pond. The house is currently occupied. To offset winery water use, the applicant proposes to demolish the existing residence at 100 Wappo Road and to relinquish in perpetuity: a) rights to install a vineyard at 100 Wappo Road, b) the right to build any new structure on 100 Wappo Road for which a building permit is required, c) the riparian rights to withdraw water directly from Mark West Creek, and d) the right to use the water from the onsite spring-fed pond for purposes other than fire protection, all of which would be formalized in a deed restriction or easement granted to the County of Sonoma or some other public agency.

The septic system is now located at 560 Wappo Road, the northernmost parcel of the Cornell holdings. The system would be located in a stand of Douglas fir and oak trees, in much the same environment as the original site, but without landslide potential. The site was reviewed by RGH Consultants, who concluded that it is situated "on a relatively stable ridgetop and outside of landslides and steeply sloping terrain. Our stability analysis indicates that the leachfield site is stable under static and seismic conditions both before and after the leachfield is constructed." A percolation test for the system was approved by the PRMD Well and Septic Division staff on June 23, 2009 (Permit #SEV09-0223).

Project Location: 100, 245, and 560 Wappo Road, Santa Rosa
APNs 028-250-007, 028-260-041 and -025

See Location Map - Attached

Environmental Finding:

The proposed project could not have a significant effect on the environment and the adoption of a Mitigated Negative Declaration is appropriate. Based upon the information contained in the Initial Study included in the project file, it has been determined that there will be no significant environmental effect resulting from this project, provided that mitigation measures are incorporated into the project. The

Mitigated Negative Declaration has been completed in compliance with CEQA State and County guidelines and the information contained therein has been reviewed and considered.

There will not be a potential significant impact on biotic habitat of concern to Fish & Game.

Initial Study: Attached

Other Attachments:

Decision-making Body: Sonoma County Board of Zoning Adjustments

Lead Agency: Sonoma County Permit and Resource Management Department

COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 565-1900 FAX (707) 565-1103

ENVIRONMENTAL CHECKLIST FORM

FILE #: UPE07-0008
PROJECT: Henry Cornell Winery

PLANNER: Dave Hardy
DATE: August 9, 2010

LEAD AGENCY: Sonoma County Permit and Resource Management Department

PROJECT LOCATION: 100, 245, and 560 Wappo Road, Santa Rosa
APNs 028-250-007, 028-260-041 and -025

APPLICANT NAME: W. Guy Davis

APPLICANT ADDRESS: 52 Front Street, Healdsburg, CA 95448

GENERAL PLAN DESIGNATION: Resource and Rural Development, 100 acre density (245 and 560 Wappo Road)
Rural Residential, 15 acre density (100 Wappo Road)

ZONING: RRD (Resource and Rural Development), B6-100 acre density, BR (Biotic Resources) (245 and 560 Wappo Road)
RR (Rural Residential), B6-15 acre density, BR (Biotic Resource) SR (Scenic Resource) (100 Wappo Road)

DESCRIPTION OF PROJECT:

This project is a revision of a winery project at 245 Wappo Road originally applied for in 2007. A prior application at 420 Wappo Road filed in 2003 was withdrawn when the application was made for the site at 245 Wappo. The applicant's Proposal Statement dated May 18, 2010, which was submitted to the County on May 20, 2010, is the basis for this subsequent review, along with the Preliminary Grading Plan dated May 14, 2010, prepared by Atterbury and Associates; the Site Plan, Floor Plan, and Elevations dated April 29, 2010, prepared by Backen Gillam architects; the Summary of the Proposed Water Use and Mitigation prepared by Thomas W. Atterbury, dated June 3, 2010; and the Preliminary Landscape Plan dated June 15, 2010 prepared by Prunuske Chatham Inc. The applicant's request is for a winery with a maximum annual production capacity of 10,000 cases on a 40-acre parcel, one of seven contiguous legal parcels owned by the applicant. The May 18, 2010 proposal includes construction of two single-story buildings totaling approximately 6,700 square feet (SF) and a 10,200 square foot cave for barrel storage. The relocation of the buildings from a site west of Wappo Road to the current location on the east side of Wappo Road, in addition to a substantial reduction in the physical size of the winery and hospitality facilities, is the fundamental change to the project; in all other respects, the project is substantially the same as that previously considered in the Mitigated Negative Declaration dated October 8, 2009.

Wine tasting would occur in a room within the wine cave. Winery production would take place within the 3,500 SF "production building" that would house fermentation tanks and crush facilities, and that abuts the cave portals used for barrel storage. The other "winery support" building would be used for the winemaker's office, laboratory, mechanical equipment, and space for bottling and case good storage. The two buildings would be on either side of a paved delivery apron that would be used for receiving fruit and also for additional parking.

The project would require a substantial amount of grading (approx. 13,515 cubic yards of cut and 1,289 yards of onsite fill) to terrace the site for the proposed buildings and excavate the cave. The plans indicate space for approximately seven parking spaces surrounded by a driveway and another parking space next to the office/support building, for a total of eight spaces, with ample pad space and driveway

size for more. A new water tank would be constructed for fire protection and domestic use on a pad north of the winery buildings, and the same pad would also be used for winery wastewater processing. The winery production building would be recessed into the hillside, creating an approximately 20-foot high cut to be retained by a soil nail cave portal that would not be part of the building. Retaining walls would also be needed along a portion of Wappo Road and the southeastern side of the winery. The tank pad for water and wastewater treatment may also require retaining walls. The building and caves would contain all winery operations and equipment. Excess soils not re-used at the winery site would be disposed offsite at a location approved to receive them.

Tasting would be by appointment only a maximum of 15 visitors at a time. There would be three full time employees, with four additional employees to help during harvest and crush. Crushing operations would take place outside on a crush pad under a canopy or indoors under a roof. Normal hours of operation (non-crush) would be 8:00 a.m. to 5:00 p.m., Monday through Friday. The process wastewater would be treated using a small patented aerobic treatment system and stored in a water tank for disposal by means of drip irrigation in the Cornell vineyards. Domestic wastewater from staff and customers would be processed using a conventional septic system with disposal in a leach field located at 560 Wappo Road. Plumbing for the wastewater would be placed in Wappo Road; the line would extend 3,000 feet from the winery treatment site. The preliminary landscape plan shows two rainwater storage tanks with a total 140,000 gallon capacity intended to catch roof run-off water during the rainy season for landscape irrigation throughout the year. These tanks are located approximately 100 feet west of the winery buildings, next to the parking lot on the west side of Wappo Road. The existing wells on the ridge to the northeast would supply the winery with water. The wells are located approximately 1,600 feet east of and 120 feet higher in elevation than the septic leach field. Stems and pomace would be composted and disced back into the vineyard and not burned.

Since the application was filed in 2007, the applicant/owner acquired the adjacent property at 100 Wappo Road, APN 028-250-007. The 15-acre property has a General Plan designation of Rural Residential, 15-acre density, and a zoning designation of RR (Rural Residential), B6-15 acre density, BR (Biotic Resource), and SR (Scenic Resource). Located on the north bank of Mark West Creek, the property abuts St. Helena Road, and formerly had a St. Helena Road address. The property contains a 1,900 square foot, three-bedroom house and a spring-fed pond. The house is currently occupied. To offset winery water use, the applicant proposes to demolish the existing residence at 100 Wappo Road and to relinquish in perpetuity: a) rights to install a vineyard at 100 Wappo Road, b) the right to build any new structure on 100 Wappo Road for which a building permit is required, c) the riparian rights to withdraw water directly from Mark West Creek, and d) the right to use the water from the onsite spring-fed pond for purposes other than fire protection, all of which would be formalized in a deed restriction or easement granted to the County of Sonoma or some other public agency.

The septic system is now located at 560 Wappo Road, the northernmost parcel of the Cornell holdings. The system would be located in a stand of Douglas fir and oak trees, in much the same environment as the original site, but without landslide potential. The site was reviewed by RGH Consultants, who concluded that it is situated "on a relatively stable ridgetop and outside of landslides and steeply sloping terrain. Our stability analysis indicates that the leachfield site is stable under static and seismic conditions both before and after the leachfield is constructed." A percolation test for the system was approved by the PRMD Well and Septic Division staff on June 23, 2009 (Permit #SEV09-0223).

SURROUNDING LAND USES AND SETTING: Briefly describe the project's surroundings:

The winery site at 245 Wappo Road is largely undeveloped other than the access road and an existing single family residence. The house is several hundred feet southwest of the winery site, which is located on a knoll adjacent to and east of the access road. The trees and shrubs on the knoll have been thinned, but contain fir, oaks, chemise, ceonothus, and manzanita. The east side of the knoll slopes down into a ravine that drains into the pond at 100 Wappo Road. The only vineyard on the 245 Wappo parcel is a small one associated with the residence. Most of the vineyard that would supply the winery is located on abutting land owned by Cornell. The winery site is not located in a designated scenic resource area, although the southern portion of the property at 100 Wappo Road is located within a County-designated

scenic corridor along St. Helena Road. There is a narrow band of biotic resources/critical habitat areas (reflecting the serpentine soils in the area that support unique plant species) at the southwestern edge of the 245 Wappo Road site, although the property at 100 Wappo Road is almost entirely within the biotic resource/critical habitat area; the property at 560 Wappo Road does not have the BR (Biotic Resource) zoning designation. The new winery buildings would be located approximately 150 feet north of the designated critical habitat for plants in serpentine soils. The geologic report for the project indicates that the knoll is immediately underlain by sandstone of the Franciscan Complex and not by serpentinite bedrock.

Land use in the project vicinity is rural. North and west of the Cornell properties is the north fork of Mark West Creek, which forms the boundary with the Bothe-Napa Valley State Park to the north of the creek. An unnamed tributary of the north fork of Mark West Creek originates on the 245 Wappo property, has steep canyon walls, and was the location of a landslide that blocked the creek during the winter of 2005-2006. The main stem of Mark West Creek runs parallel to St. Helena Road at the southerly end of the Cornell holdings. The north side of St. Helena Road is interspersed with forest and chaparral scrub, some of the latter having been cleared for pasture and for vineyards. The area south of St. Helena Road is forest land that has been divided into large acreage residential lots. To the east are the vineyards of the Pride family winery, developed in the mid 1990s, as well as homes fronting on St. Helena Road. The nearest off-site neighboring dwellings are more than 1,100 feet to the south of the winery site. A winery with a maximum annual production capacity of 6,000 cases was approved in August of 2002 on Mattei Road, another private road off of St. Helena Road about two miles west of the site. Parcels in this area range from over 120 acres to less than five acres in size. Zoning is RRD (Resources and Rural Development), with 100 acre density. The entire upper Mark West Creek watershed has been designated a Priority Conservation Area by the Association of Bay Area Governments (ABAG).

Other Public Agencies whose approval is required (e.g. permits, financing approval, or participation agreement):

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Less than Significant with Mitigation" as indicated by the checklist on the following pages.

- | | | |
|---|--|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agricultural & Forest Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Greenhouse Gas Emission | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology/Water Quality |
| <input type="checkbox"/> Land Use and Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities/Service Systems | |
| <input type="checkbox"/> Mandatory Findings of Significance | | |

DETERMINATION

On the basis of this initial evaluation:

- The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed by in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- Although the proposed project could have a significant effect on the environment, all potentially significant effects were previously analyzed in an earlier EIR or Negative Declaration pursuant to applicable standards and potential impacts have been avoided or mitigated pursuant to that earlier EIR or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project. There are no changes in the project, no new information related to potential impacts, and no changes in circumstances that would require further analysis pursuant to Section 15162 of CEQA Guidelines, therefore no further environmental review is required.

Incorporated Source Documents

In preparation of the Initial Study checklist, the following documents were referenced/developed, and are hereby incorporated as part of the Initial Study. All documents are available in the project file or for reference at the Permit and Resource Management Department.

- Project Application and Description
- Initial Data Sheet
- Sonoma County General Plan and Associated EIR
- Specific or Area Plan (Franz Valley)
- Sonoma County Zoning Ordinance
- Sonoma County Rare Plant Site Identification Study
- Project Referrals from Responsible Agencies
- State and Local Environmental Quality Acts (CEQA)
- UPE03-0092 File
- Supplemental Groundwater Availability Study, Todd Engineers, August 2006
- Groundwater Letter updates, Todd Engineers, April 27, 2007, and June 12, 2007
- Preliminary Geologic Study, RGH Consultants, Inc. May 31, 2007, updated April 22, 2008 and September 21, 2009
- Review of Supplemental Groundwater Studies by Kleinfelder, dated March 8, 2008
- Review of RGH Reports by Kleinfelder, dated July 2, 2008 and October 1, 2009
- Greenhouse Gas Analysis by Rimpo and Associates, July 13, 2010
- Biological Resources Assessment by Prunuske Chatham, Inc. July 2010
- Summary of Proposed Water Use and Mitigation, Thomas W. Atterbury, June 3, 2010
- Geotechnical Study Report, RGH Consultants, June 23, 2010
- Geologic and Geotechnical Peer Review, Cotton, Shires and Associates, July 2, 2010

EVALUATION OF ENVIRONMENTAL IMPACTS:

- 1) A brief explanation is required for all answers except "No impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- 2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- 4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section 17 at the end of the checklist, "Earlier Analysis" may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c)(3)(D). In this case, a brief discussion should identify the following:
 - a) Earlier Analysis Used. Identify and state where they are available for review.
 - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated", describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
 - a) the significance criteria or threshold, if any, used to evaluate each question; and
 - b) the mitigation measure identified, if any, to reduce the impact to less than significance.

Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

- a) 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 non-agricultural use? _____ X _____

Comment: No. According to the Sonoma County Important Farmlands Map -2000 (database), the site is designated "Grazing and Other Land". The facility will be used for processing of agricultural products. The project would not convert prime land to a non-agricultural use, because the soils are not prime and the use is agricultural.

- b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? _____ X _____

Comment: The proposed project would not conflict with the zoning as agricultural processing is an allowed use in the RRD zoning district with use permit approval. The project site is not under a Williamson Act contract.

- c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? _____ X _____

Comment: The project is consistent with the consistent with the Sonoma County Zoning Ordinance, which allows wineries in a Resource and Rural Development zoning district. The zoning district to protect timber land is the TP-Timber Production district; this project is not in such a district. Comments from Cal-Fire staff about the property, as well as the Prunuske Chatham assessment (see below Sec. 4, have indicated that the land on which the winery is proposed is best characterized as oak woodland, not commercial timber forest. The number of trees to be removed is offset by additional trees to be planted. See 2a above.

- d) Result in the loss of forest land or conversion of forest land to non-forest use? _____ X _____

Comment: As noted above, Cal-Fire staff have indicated in prior written and oral comments that the site of the winery is characterized by oak woodland, not commercial timber forest, so no forest land would be converted to non-forest use. See 2a above.

- e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

_____ _____ X _____

Comment: See 2a, 2b, and 2d above.

3. **AIR QUALITY** Would the project:

Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
--------------------------------------	---	------------------------------------	--------------

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- a) Conflict with or obstruct implementation of the applicable air quality plan?

_____ _____ X _____

Comment: The project is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) The District does not meet federal or state standards for ozone precursors, and has adopted an ozone Attainment Plan and a Clean Air Plan describing steps that will be taken to bring air quality in the district into compliance with federal and state Clean Air Acts' ozone standards. The plans deal primarily with emissions of ozone precursors (nitrogen oxides and volatile organic compounds(hydrocarbons)). The project will not conflict with the District's air quality plans to reduce emissions from new uses.

- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

_____ _____ X _____

Comment: State and federal standards have been established for "criteria pollutants": ozone precursors, carbon monoxide, sulfur dioxide and particulates (PM10 and PM2.5). The pollutants NOx (nitrogen oxides) and hydrocarbons form ozone in the atmosphere in the presence of sunlight. Significance thresholds for ozone precursors, carbon monoxide and particulates have been established by BAAQMD. The principal source of ozone precursors is vehicle emissions, although stationary internal combustion engines must also be considered. BAAQMD generally does not recommend detailed NOx and hydrocarbon air quality analysis for projects generating less than 2,000 vehicle trips per day. Given the low traffic generation of the project (only 15 guests and seven employees are allowed at one time, in addition to some seasonal grape delivery) relative to the screening criteria, ozone precursor emissions would be less than significant.

Detailed air quality analysis for carbon monoxide is generally not recommended unless a project would generate 10,000 or more vehicle trips a day, or contribute more than 100 vehicles per hour to intersections operating at LOS D, E or F with project traffic. Given the low traffic generation of the project relative to the screening criteria, carbon monoxide emissions would be less than significant.

- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under

an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

_____ X _____

Comment: The BAAQMD is a non-attainment area for ozone precursors and particulate matter (PM) See 3b for a discussion of ozone. PM10 is a criteria pollutant that is closely monitored in the BAAQMD. Readings in the district have exceeded state standards on several occasions in the last several years. The high PM10 readings occurred in the winter and are attributed to the seasonal use of wood burning stoves.

The project will not have a significant operational long-term effect on PM10, because all surfaces will be paved or landscaped, and dust generation will be insignificant when the project is completed. However, there could be a significant short-term emission of dust (which would include PM10) during construction. These emissions could be significant at the project level, and would also contribute to a cumulative impact.

The impact could be reduced to less than significant by including dust control as described in the following mitigation measure:

Mitigation Measure AIR-1: The following dust control measures will be included in the project:

- A. Water or other dust palliative will be applied to unpaved portions of the construction site, unpaved roads, parking areas, staging areas and stockpiles of soil daily as needed to control dust.
- B. Trucks hauling soil, sand and other loose materials over public roads will cover the loads, or will keep the loads at least two feet below the level of the sides of the container, or will wet the load sufficiently to prevent dust emissions.
- C. Paved roads will be swept as needed to remove any visible soil that has been carried onto them from the project site.

Mitigation Monitoring: Building/grading permits for ground disturbing activities shall not be approved for issuance by Project Review staff until the above notes are printed on the building, grading and improvement plans. The applicant shall be responsible for notifying construction contractors about the requirement for dust control measures to be implemented during construction. If dust complaints are received, PRMD staff shall conduct an on-site investigation. If it is determined by PRMD staff that complaints are warranted, the permit holder shall implement additional dust control measures as determined by PRMD or PRMD may issue a stop work order. (Ongoing during construction)

d) Expose sensitive receptors to substantial pollutant concentrations?

_____ X _____

Comment: Sensitive receptors are facilities or locations where people may be particularly sensitive to air pollutants such as children, the elderly or people with illnesses. These uses include schools, playgrounds, hospitals, convalescent facilities and residential areas. There are no such uses nearby, and the nearest offsite residence from the winery site is more than 1,100 feet away. There will be no significant, long term increase in emissions, but during construction there could be significant dust emissions that would affect nearby residents. Dust emissions can be reduced to less than significant levels by the mitigation measure described in item 3c above.

The California Air Resources Board has determined that diesel emissions contain toxic air contaminants. Exposure of people to these emissions over a long period of time is considered to increase the risk of cancer. The exhaust emissions from trucks associated with this project will increase localized concentrations of toxic air contaminants. The entrance road to the winery passes 75 to 100 feet from two residences, but the winery itself (where most of the diesel emissions will

occur) is over 1,300 feet from the nearest offsite residence. One of the residences, now owned by Mr. Cornell, is proposed to be demolished. Given the low volume of truck traffic, and the distance from the receptors, the emissions of toxic air contaminants would not be substantial.

- e) Create objectionable odors affecting a substantial number of people?

Comment: The project includes crushing grapes, which can cause odors. The BAAQMD has no record of complaints related to grape pomace, except when burned. The applicant proposes to spread the crush residue in the vineyard as a soil amendment, and the nearest off site residence is more than 1,100 feet away from the crush area of the winery.

4. **BIOLOGICAL RESOURCES**
 Would the project:

Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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- a) 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 the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Comment: Mark West Creek and the North Fork of Mark West Creek have documented salmonid fisheries that are listed as threatened and endangered. In their letter of November 24, 2008, the California Department of Fish and Game notes that the North Fork has supported a run of Central Coastal steelhead, a federally threatened species, and may support Central Coastal coho salmon, a State and Federal endangered species. However, passage of fish up the North Fork could be thwarted by a road culvert at St. Helena Road, depending upon the time of year. "DFG has documented coho salmon in the main stem Mark West Creek, downstream of the project side. Excessive input of fine sediment from hill slope runoff or from roads in the vicinity of the project site will likely have adverse effects on listed salmonids in the project reach as well as downstream of the project reach" A comment letter dated November 9, 2008, from Stacy K. Li, PhD., salmon and steelhead ecologist, also establishes a concern about the effects of erosion on fish. Dr. Li recommends avoiding activities that would tend to activate landslides, but does not identify any other specific project-related mitigation measures.

The Nov. 25, 2008, North Coast Regional Water Quality Control Board letter does not comment specifically on the winery project but does summarize inspections and observations by staff in recent years. The letter notes that RWQCB staff was called to the site in September 2005 regarding the brush clearing, and staff estimated that approximately five acres had been cleared. However, the work did not require a construction stormwater permit because the site had not been graded. "Upon re-inspection, staff found that all the piles of woody debris had been removed and that sufficient erosion and sediment controls had been placed."

The letter discusses the relationship of brush clearing and maintaining tree canopy, as well as water use, relative to maintaining the habitat for salmonids in Mark West Creek. It also urged a larger view of the watershed:

"It became evident from public comment during the public hearing that the cumulative impacts of land use changes within the upper Mark West Creek watershed are significantly impacting water quality and beneficial uses of water within this watershed. This reflects the potential need for a full environmental assessment, including an assessment of cumulative impacts, of the Mark West Creek watershed to determine how water quality and all beneficial uses of water are affected,

prior to approval of new developments in this area....

"...Balancing beneficial uses within this upper watershed may be accomplished by reducing water use during critically dry years by a policy of cessation of groundwater pumping at specified dates, providing for additional onsite water storage during periods of high winter flows, and creating overstory again by planting trees to provide canopy and help reduce soil erosion and infiltrate stormwater runoff. Balancing domestic and agricultural water usage while maintaining sufficient flows to sustain viable fish populations is the goal and will require community based solutions."

The project incorporates a number of measures to avoid erosion of fine sediments and other soils. The Erosion control Notes on the Preliminary Grading Plan (Sheet C-2) include fiber rolls, silt fences, concrete washout boxes, hydroseeding, energy dissipaters, and proper storm water drain inlets, as well as a requirement to use most recent Best Management Practices. The Grading and Storm Water Section of the PRMD reviewed the drawings, and submitted conditions of approval that prohibit residue or polluted runoff from the crush pads or winery construction dirt from reaching public storm water systems or structures.

To further reduce the potential for erosion to add fine sediments to Mark West Creek and its tributaries, the following mitigation measures are included in this project. With the incorporation of these mitigation measures, the project will have no potential significant impacts to the watershed either on a project-specific bases or on a cumulative basis.

Mitigation Measure BIO-1: The dust control Mitigation Measure from the Air Quality section will serve to reduce fine sediments from the project during construction. In addition, the following measures will provide long-term avoidance of fine sediments from the project reaching the creek.

Proper erosion control and other water quality Best Management Practices (BMPs) shall be implemented to avoid sedimentation and disturbance to downstream aquatic habitats. To the extent that he has legal control over the access road, the applicant shall pave or chip seal or provide an equivalent method of containing dust and dirt on Wappo Road from the winery site down to St. Helena Road. Finish paving or resurfacing may be completed after construction of the winery and wine cave, but preliminary work on the surface that will contain dust shall be completed prior to commencement of construction of the cave and export of excavated material.

Mitigation Monitoring: Building/grading permits for ground disturbing activities shall not be approved for issuance by Project Review staff until the above note is printed on the building, grading and improvement plans. The applicant shall be responsible for notifying construction contractors about the requirement for dust control measures to be implemented during construction. If dust or erosion complaints are received, PRMD staff shall conduct an on-site investigation. If it is determined by PRMD staff that complaints are warranted, the permit holder shall implement additional dust and/or erosion control measures as determined by PRMD or PRMD may issue a stop work order. (Ongoing during construction)

Comment: The California Department of Fish and Game (DFG), in their Nov.24, 2009, letter, observed that substantial vegetation removal prior to filing of the subject application posed potentially significant impacts to terrestrial wildlife and plants. To offset some of the vegetation removal and to provide better geologic stability and erosion control, the following mitigation measure is included to require use of native plants in the project landscaping and to require a landscape plan that will restore some of the habitat adversely affected by the pre-project grubbing. This condition, coupled with the best management practices for erosion control, are the best ways to avoid sedimentation of the creeks that could adversely affect fish, and should reduce potential impacts to less than significant. Additional landscaping will also provide carbon offsets and sequestration to reduce Greenhouse Gas effects.

Mitigation Measure BIO-2: Prior to issuance of a grading permit for the winery building or building or grading permits for the wine cave, the applicant shall submit a landscape plan for review and approval by the County Design Review Committee. The plan shall make abundant use of native plants indigenous to the property and the upper Mark West Creek watershed and shall encourage re-growth

of native shrubs and trees in the area downhill from the winery site, consistent with the fire safety and Vegetation Management Plan requirements of the County Fire Marshal. Invasive exotic species shall be prohibited.

Mitigation Monitoring: Building/grading permits for ground disturbing activities shall not be approved for issuance by Project Review staff until the Design Review Committee has approved a landscape plan, and the approved plan is included a sheet or sheets on the building and/or grading plans. Occupancy of the winery or the wine cave shall not occur until the approved landscaping measures are completed.

Comment: The July 2010 project revisions include the re-design, downsizing, and re-location of the winery buildings on the east side of Wappo Road. This area has undergone some brush removal in the past, although not the complete grubbing that the former site experienced. The applicant engaged the firm of Prunuske Chatham, Inc. to prepare a Biological Resources Assessment of the revised project area.

The July 2010 report makes the following observations about the project site. The property supports one rare bulbiferous herb (Narrow-anthered brodiaea), and two other rare species, Clara Hunt's milk-vetch and Jepson's leptosiphon, have moderate potential to occur on the property. Although not listed by state or federal agencies, these plants are listed by the California Native Plant Society as "rare." The property supports high-quality native chaparral, oak woodland, and grassland habitats as well as habitat for a variety of common wildlife species (e.g., reptiles, amphibians, mammals). The property is adjacent to a freshwater marsh (approximately 250 feet from the winery construction area) that has suitable habitat to support special-status amphibians and reptiles potentially including California red-legged frog and northwestern pond turtle, although there are no documented occurrences of California Red Legged Frog within the watershed or project region. If present, these species may utilize the project site for overland migrations, breeding (turtle), and/or aestivation. The project site and adjacent habitats support breeding habitat for birds protected under the Migratory Bird Treaty Act and California Fish and Game Code, and the property supports potential roosting and foraging habitat for special status and common bat species.

To avoid impacts to rare plant species, the following mitigation measure will be included in the project.

Mitigation Measure BIO-3(Plants): Construction plans shall be modified to avoid impacts to narrow-anthered brodiaea. No disturbance should occur within 50 feet of flowered brodiaea plants. Protective measures shall be in place during construction to minimize disturbance (e.g., temporary chain-link construction fencing around existing populations). Where impacts are unavoidable, the following mitigation and monitoring plan shall be developed and implemented by a qualified botanist or vegetation ecologist:

- a) Mark and map locations of existing populations (when plants are in flower).
- b) Install temporary construction fencing around existing populations.
- c) Transplant, as applicable.
- d) Collect seed by hand and store seed until needed.
- e) Reseed in an area on the property, agreed upon with the client and regulatory agencies, that is suitable for the species and outside of the development envelope.
- f) Develop a long-term monitoring plan for the protected and propagated plants. This shall include five (5) years of annual monitoring to determine survivorship of propagated plants.
- g) Mitigation reporting annually to PRMD.

Comment: The biological assessment discusses impacts to native trees. The landscape plan for the property identifies several coast live oaks to be transplanted and others to be removed. The County's Tree Protection Ordinance does not apply to agricultural operations or wineries. Nevertheless, the following mitigation measure is appropriate because native trees are particularly susceptible to disturbance, especially within the root crown (the base of the trunk) and root zone commonly referred to as the Root Protection Zone (RPZ; defined as 1.5 times the dripline radius measured from the

trunk). The Root Protection Zone also extends approximately three feet below the soil surface, and could be impacted by subsurface excavation for the wine storage cave.

Mitigation Measure BIO-4 (Trees): When feasible, work within the RPZ should be limited, and all trees greater than 6 inches in diameter at breast height should be retained. If trees are to be removed, they shall be replaced with in-kind species at a ratio of 3:1 for all trees over 6 inches in diameter at breast height. These mitigation ratios shall also be applied to trees that undergo root damage due to installation of the wine cave. An arborist, qualified botanist or vegetation ecologist shall be retained to complete a final tree count for mitigation purposes prior to construction. In those trees to be removed or pruned substantially, a qualified biologist should survey for roosting bats prior to removal or pruning.

Mitigation Measure BIO-5 (Bats): To avoid impacts on special-status and common bat species, construction should be limited to daylight hours to prevent interference with foraging abilities. If any trees are removed, a qualified biologist should survey for roosting bats prior to removal. If occupied roosts are identified, the qualified biologist shall prescribe minimum buffers from construction activities, and removal of the roost trees shall not occur until the roost is unoccupied.

Mitigation Measure BIO-6 (Birds): To avoid potential losses to breeding birds, construction activities shall occur outside of the critical breeding period (March 15 to August 15). If construction commences (e.g., vegetation removal, grading) prior to the start of the current breeding season, preconstruction surveys will not be necessary. Any vegetation removal should occur during the nonbreeding season (August 15 to March 15). If construction commences after March 15th, the work area should be surveyed by a qualified biologist to determine if active nests are present. If during the breeding season the construction site is left unattended for more than two weeks, a survey should be completed to determine if breeding birds have moved back into the area and are occupying active nests. If active nests or behavior indicative of nesting birds are encountered, those areas plus a 50-foot buffer area for small songbirds and 200 feet for larger species (e.g., raptors, owls, etc.) should be designated by the biologist and avoided until the nests have been vacated.

Mitigation Measure BIO-7 (Wildlife): A. To avoid impacts on wildlife (e.g., reptiles, amphibians, and mammals) within the immediate work area, a preconstruction survey (on the day preceding work and/or ahead of the construction crew) shall be performed prior to the disturbance of the site and removal of vegetation to ensure no special-status species are occupying the area. If special-status species (e.g., California red-legged frog; northwestern pond turtle) are observed within the work area or immediate surroundings, these areas should be avoided until the animal(s) has (have) vacated the area, and/or the animal(s) should be relocated out of the area by a qualified biologist, upon approval by the regulatory agencies.

B. Temporary wildlife exclusionary fencing (e.g., silt fence, which is a piece of synthetic filter fabric (also called geotextile) shall be installed around work areas during construction. Openings will be restricted to areas of construction site access for workers and equipment. This fencing shall be sized and located to preclude wild animals from entering the work area and prevent construction debris and workers from entering adjacent aquatic habitats.

C. Before any construction begins, a qualified biologist shall conduct a training session for all construction crew personnel. The training should include a discussion of the sensitive biological resources within the project site and the potential presence of special-status species. This should include a discussion of special-status species' habitats, protection measures to ensure species are not impacted by project activities, project boundaries, and biological conditions outlined in the project permits.

D. All staging, maintenance, fueling, and storage of construction equipment shall be conducted in a location and manner that will prevent potential runoff of petroleum products into adjacent aquatic habitats. Oil-absorbent and spill-containment materials shall be on site at all times.

E. All trash that may potentially attract predators (e.g., food) shall be properly stored and removed at

the end of the day. Following construction, all trash and construction debris should be removed.

F. To prevent harassment, injury, or mortality to sensitive species or their habitat, no pets shall be permitted within the work area.

Mitigation Monitoring: PRMD staff shall not sign off on plans for issuance of permits unless the above biotic mitigation measures are included as notes on the building and grading plans. Construction shall not commence until the qualified biologist informs PRMD staff that the required fencing and training measures have been completed.

- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? _____ _____ X _____

Comment: The project does not include any direct disturbance along a riparian habitat or designated sensitive natural community. The project site is located approximately 250 feet from (and uphill from) the spring-fed pond on 100 Wappo Road, approximately 1,500 feet from the main fork of Mark West Creek to the south, approximately 2,000 feet from the North Fork of Mark West Creek to the east, and 800 feet from the un-named tributary to the North Fork. The nearest formally designated BR (Biotic Resource) area on the Sonoma County General Plan is located approximately 165 feet south of the development site, and is based upon serpentine soils that support certain plant communities. See Comment 4a above.

- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? _____ X _____ _____

Comment: There is a spring-fed wetland and pond on the property at 100 Wappo Road, approximately 250 feet south and downhill from the winery location. The project does not propose to remove, fill, or alter the pond or wetland, although the winery construction site on the east side of Wappo Road drains toward from the pond. Impacts to potential pond wildlife are discussed in 4a above.

Mitigation: See 4a.

- d) 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? _____ _____ X _____

Comment: The project parcel is developed with an existing house and fencing structures, although they are several hundred feet southwest of the proposed winery. No fencing is proposed that would obstruct wildlife movement in the vicinity of the winery. The project development does not include any work within a creek. The project does not propose construction or structures that could substantially interfere with the movement of migratory fish or wildlife species, although it may affect habitat, as discussed in Comment 4a above.

- e) Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance? _____ X _____

Comment: The winery site is over 165 feet from any critical habitat area or biotic resource designated in the Sonoma County General Plan and the Zoning Ordinance, and the biotic resource designation is related to plant species adapted to serpentine soils. The original site was previously been grubbed in 2005, and the new site exhibits signs of brush clearing and chipping. The RGH geologic report says that the winery site topsoils consist mainly of a "loam that exhibits moderate plasticity." The site is not in a Valley Oak Preservation area. While some large trees would be removed as a result of the project, the County Tree Protection Ordinance does not apply to agricultural operations or wineries. Nevertheless, the applicant is required to either transplant or replace trees, as discussed above at item 4a.

Mitigation: See Mitigation Measure 4a BIO 2 above.

- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat conservation plan? _____ _____ X _____

Comment: There are no known regional or state habitat conservation plans for this area. The distance of the development from the biotic resource area as a protection measure is consistent with the Franz Valley Specific Plan and the Sonoma County General Plan.

5. **CULTURAL RESOURCES** Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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- a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5? _____ _____ X _____

Comment: A Cultural Resources Survey was done on the site, and no historical resources were found on the site.

- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5? _____ X _____

Comment: No archaeological resources were found on the project site. The following mitigation ensures that should resources be uncovered, they will be appropriately protected.

Mitigation Measure 5.b All building and/or grading permits shall have the following note printed on plan sheets:

"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 property, all work shall be halted in the vicinity of the find and County 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. Historic artifacts potentially include all by-products of human land use greater than

50 years of age including trash pits older than fifty years of age. 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. Mitigations may include avoidance, removal, preservation and/or recordation in accordance with California law. Archeological evaluation and mitigation shall be at the applicant's sole expense.

"If human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and PRMD staff, County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American, the Native American Heritage Commission must be contacted by the Coroner so that a "Most Likely Descendant" can be designated and the appropriate provisions of the California Government Code and California Public Resources Code will be followed."

Mitigation Monitoring 5.b: Building/grading permits shall not be approved for issuance by Project Review staff until the above notes are printed on the building, grading and improvement plans.

- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? _____ X _____

Comment: The project includes digging a cave. Paleontological resources may be found during this excavation, although none were observed during the geotechnical investigation of the site for geologic suitability.

Mitigation Measure 5.c: If paleontological artifacts are found during site development, all earthwork in the vicinity of the find shall cease, and PRMD staff shall be notified so that the find can be evaluated by a qualified paleontologist. When contacted, a member of PRMD Project Review staff and the paleontologist shall visit the site to determine the extent of the resources and to develop proper mitigation measures required for the discovery. No earthwork in the vicinity of the find shall commence until a mitigation plan is approved and completed subject to the review and approval of the paleontologist and Project Review staff. This condition shall be noted on all grading and construction plans and provided to all contractors and superintendents on the job site regarding the procedures to follow in the event that artifacts are found including contact information for PRMD.

Mitigation Monitoring 5.c: Staff shall check plans for notation of the condition, prior to issuance of grading permits and shall conduct site inspections as necessary during construction. This condition shall be noted on all grading and construction plans and provided to all contractors and superintendents on the job site.

- d) Disturb any human remains, including those interred outside of formal cemeteries? _____ X _____

Comment: There was no evidence that the site contains a burial site.

Mitigation Measure 5.d: If human remains are encountered, excavation or disturbance of the location shall be halted immediately in the vicinity of the find, and the County Coroner contacted. If the Coroner determines the remains are Native American, the Coroner will contact the Native American Heritage Commission (NAHC). The NAHC will identify the person or persons believed to be most likely descended from the deceased Native American. The NAHC will then work with the applicant on re-interring the remains. The applicant shall be responsible for all costs incurred in the removal, identification and reburial of the remains. This condition shall be noted on all grading and construction plans and provided to all contractors and superintendents on the job site regarding the procedures to follow in the event that human remains are found including contact information for the County Coroner's Office.

Mitigation Monitoring 5.d: Staff shall check plans for notation of the condition, prior to issuance of

grading permits and shall conduct site inspections as necessary during construction.

6. **GEOLOGY AND SOILS** Would the project:

Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) 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? Refer to Division of Mines and Geology Special Publication 42.

_____ X _____

Comment: A Preliminary Geotechnical Study Report of the 2007 site west of Wappo Road was prepared by RGH consultants, Inc., dated May 31, 2007, and updated April 22, 2008. As a result of comments at the public hearing and further site investigations, the applicant revised the project description to relocate the septic system away from a potential landslide. RGH prepared an additional report dated September 21, 2009, to address slope stability. The 2009 updated RGH report was reviewed on behalf of the County of Sonoma by Kleinfelder in a letter by William McCormick and Terry Craven prepared October 1, 2009. A second peer review was prepared for the County by the firm of Cotton, Shires and Associates, Inc. That report questioned why the winery building was located on a dormant landslide and suggested relocation to the present location. As a result, the applicant modified the project location and reduced the size of the buildings.

RGH conducted additional testing in April 2010, including drilling, logging and sampling seven core borings to depths ranging from 39 to 119 feet at the new site. In addition, 11 test pits were excavated. RGH prepared a new report dated June 23, 2010, about the new location. This report was also reviewed for the County by Cotton Shires. The RGH report says:

"We did not observe landforms at the winery site that would indicate the presence of active faults and the site is not within a current Alquist-Priolo (A-P) Earthquake Fault Zone...since the site is not within a current (A-P) Earthquake Fault Zone, we believe the risk of surface fault rupture at the site is low...The soils at the site were generally stiff to very stiff sandy clays with some gravel. Therefore, we judge the potential for liquefaction at the site is low."

In terms of slope stability, RGH concludes that the winery site is considered stable under both stable and seismic conditions.

RGH noted that the ground surface is "soft and spongy in the winter months and dry and hard in the summer months. These soil conditions are generally associated with weak, porous surface soils." RGH observes that "the detrimental effects can be remediated by strengthening the soils during grading. This can be achieved by excavating the weak soils and replacing them as properly compacted (engineered) fill."

Cotton Shires responded:

"In our opinion, site surface mapping and site subsurface exploration has been completed in a manner consistent with prevailing standards of geotechnical practice. We also concur that the winery site is favorable located on an intact, bedrock supported ridge displaying sign of long term stability. In our opinion, comprehensive quantitative slope stability analyses are not necessary to demonstrate the geotechnical suitability of the currently proposed building sites."

"We do not have remaining geologic or geotechnical objections to the currently indicated site"

south-westerly-flowing intermittent blue-line stream that empties into Mark West Creek off the property. Mark West Creek is a perennial blue-line stream that flows westerly adjacent to St. Helena Road."

The revised 2010 project description estimates approximately 13,515 cubic yards of excavation and approximately 1,289 cubic yards of fill on the project site. The net 6,340 cubic yards of excavated soils would be removed off site to an authorized and permitted recipient. Drainage from roof tops will be directed to two holding tanks for re-use on landscaping during the dry months, thereby reducing the amount of water discharge that could cause erosion. Discharge for downspout points, roadway culverts and ditches and storm drain outfalls will need to be protected against erosion and sloughing by installing energy dissipaters and then piping the collected waters downhill to planned discharge facilities.

In addition to these measures, the mitigations identified in the Biological Resources section will help reduce long term fine sediments from erosion that could adversely affect the fishery habitat.

Mitigation Measure: See BIO-1 and BIO-2 IN Section 4.a. above and also 6.a. above

Mitigation Monitoring: See BIO-1 and BIO-2 IN Section 4.a. above and also 6.a. above

- c) Be located on 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?

Comment: See 6a above.

Mitigation: See 6a above.

- d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Comment: See 6a above.

Mitigation: See 6a above.

- e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Comment: The domestic wastewater is proposed to be disposed in a new leach field approximately 2,000 feet north of the proposed winery on a knoll at 560 Wappo Road. The applicant's civil engineer conducted percolation tests at the site of the proposed domestic wastewater leach field pursuant to a PRMD site evaluation permit (SEV09-0223). The test results were reviewed by the environmental health specialist for that area, and the proposed location was approved on June 23, 2009, for eventual construction of a system designed by a registered environmental health specialist or civil engineer. The system would be located in a stand of Douglas fir and oak trees, in much the same environment as the original site, but without landslide potential. The site was reviewed by RGH Consultants, who concluded that it is situated "on a relatively stable ridgetop and outside of landslides and steeply sloping terrain. Our stability analysis indicates that the leachfield site is stable under static and seismic conditions both before and after the leachfield is constructed."

7. **GREENHOUSE GAS EMISSION** Would the project:

Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? _____ X _____

Comment: An analysis of greenhouse gas (GHG) associated with the project was prepared by Rimpo and Associates in a report dated July 13, 2010. Rimpo estimates the GHG from construction to be 93.7 metric tons per year of carbon dioxide equivalents (CO2e) in the first year of construction (predicted to be 2010) and 81.1 metric tons in 2011 (or the second year of construction). During the first full year of operation, the winery would generate 209.4 metric tons. With mitigations but excluding vineyard carbon sequestration, the winery would generate 181.9 metric tons of CO2e in 2012. Counting vineyard sequestration, the winery would generate only 9.12 metric tons of CO2e in 2012, according to Rimpo. For purposes of this Initial Study analysis, the existing vineyards are considered by PRMD to be part of the project baseline and not a potential new source of sequestration. Nevertheless, the project would fall below the recently adopted threshold of significance of the Bay Area Air Quality Management District (BAAQMD), in whose jurisdiction this project is located, of 1,100 metric tons per year for land use projects.

Rimpo notes that although the BAAQMD has not adopted a threshold of significance for construction-related GHGs, the estimated construction impacts fall well below the 1,100 metric ton threshold for operation impacts.

b) Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? _____ X _____

Comment: Regarding local efforts on GHG reductions, the Sonoma County Board of Supervisors recently adopted the Sonoma County Climate Protection Campaign which sets a target to reduce GHG emissions to 25% below 1990 levels by the year 2015. This is included as Objective OSRC 14.4 in the Open Space and Resource Conservation Element of GP2020. Policy OS-14g requires development of a program with a methodology to measure the baseline in 1990 and to establish the means to achieve the object.

The County has completed the first two of five steps in the campaign. The next step is to complete the Community Climate Action Plan (the blueprint to help Sonoma County achieve this emissions target) and then implement the actions in the Plan and develop an on-going monitoring process to ensure that the County meets its reduction target.

On November 4, 2008 the Sonoma County Board of Supervisors adopted a resolution selecting the Build it Green (BIG) New Home Construction, Home Remodeling and Multifamily Green Building Guidelines for Residential Construction, and Leadership in Energy and Environmental Design (LEED®) Commercial Green Building System for Commercial Construction guidelines, along with their respective Green Points Checklists, set compliance thresholds, and directed staff to develop a green building ordinance based on these guidelines.

The Climate Protection Campaign has provided a list of projects that are effective and under local control that will reduce Greenhouse Gases if they are implemented. The Plan's solutions involve four major categories: 1. Improve efficiency in energy and water use; 2. Shift transportation from fossil fuel vehicles to transit, walking, bicycling, etc.; 3. Invest in local renewable energy sources; and 4. Protect forests and farmlands, sequester carbon, and convert waste into energy.

Project mitigation measures described by Rimpo include solar voltaic panels, carbon sequestration from new tree planting, and emission reductions from two California Air Resources Board (ARB) rules.

The winery will include solar panels that will supply 30 percent of total electricity demand. Not discussed in Rimpo report, there should also be reduced impacts to GHG because of re-use of rainwater from the buildings' roofs that will be retained in two 70,000 gallon tanks to irrigate the landscaping. This reduces the need to pump groundwater and the electricity required to run the pump.

Mitigation Measure 7.b (GHG): To further reduce greenhouse gas emissions, the applicant shall: include roof-mounted solar panels in the project that will reduce estimated electricity usage by 30 percent; planting 42 or more new hardwood trees and 16 or more new conifers to replace the loss of 17 hardwoods and three conifers, as well as additional landscaping in the area downslope of the original winery site at 245 Wappo (the area of the dormant landslide). In addition, the applicant shall undertake the mitigation in BIO-2 to restore grubbed oak woodland and chaparral, which will increase oxygen production and carbon sequestration.

Mitigation Monitoring: The applicant shall include the location of the 42 or more hardwood trees and the 16 or more new conifers on the landscaping plan to be included with the building permits for the project buildings. PRMD staff shall not approve the building permits for issuance unless the trees, and the irrigation system to maintain them in their early years, are shown on the plans. Construction drawings for the winery buildings shall include details that show the location of the solar panels and the calculations of energy usage. PRMD staff shall not approve the building permits for issuance unless the plans show the requisite solar energy system. The buildings shall not be cleared for final occupancy until the staff planner verifies in the field that the trees have been planted and the solar energy system is installed.

8. **HAZARDS AND HAZARDOUS MATERIALS**

Would the project:

Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

_____ _____ X _____

Comment: The processing and fermentation of the grapes to wine includes the use and maintenance of machinery and equipment that require the transport, use, and disposal of hazardous materials (e.g. oils, diesel, solvents, lubricates, etc.) The vineyard was approved and installed several years ago, but pesticides and herbicides are still used and stored on the project site. The Sonoma County Agricultural Commissioners Office regulates the storage and use of herbicides and pesticides by requiring an annual issuance of a Pesticide I.D. and classes be taken by person applying such hazardous materials for agricultural uses such as the vineyard operation. A referral describing the project was sent to the Department of Emergency Services which required that the project comply with Fire Safe Standards for commercial development. The project itself (the winery) does not produce or generate hazardous materials. A referral describing the project was also sent to the Environmental Health Specialist-Project Review which required compliance with hazardous waste generator laws and submittal of copies of appropriate permits.

- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

_____ _____ X _____

Comment: The use of any hazardous materials by the winery and vineyard will not be of sufficient volatility or quantity to cause a hazard to the public. These materials are commonly used in the wine industry and will be handled according to existing regulations and codes.

- c) Emit hazardous emissions or handle hazardous or acutely hazardous materials,

substances, or waste within one-quarter mile of an existing or proposed school? _____ X

Comment: The subject property is not within a one-quarter mile of an existing or proposed school.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? _____ X

Comment: The site is not identified as a hazardous materials sites under Government Code Section 65962.5.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? _____ X

Comment: The project is not in close proximity to an airport.

f) For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? _____ X

Comment: The project is not located within the vicinity of a known private airstrip.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? _____ X

Comment: There will be no impacts on emergency responses or evacuation plans as a result of the project.

h) 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? _____ X _____

Comment: According to the Safety Element of the General Plan, the project site is located in an area with very high or high potential for large wildland fires. The site is located east of a knoll where substantial brush clearing has occurred that provides a significant buffer around the proposed facility. The project must conform to Fire Safe Standard requirements for commercial uses related to fire sprinklers, emergency vehicle access, and water supply. These standard provisions reduce the potential exposure to people or structures to a less than significant impact.

9. **HYDROLOGY AND WATER QUALITY**
 Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	_____	_____	<u>X</u>	_____

Comment: The proposed facility would generate wastewater from crushing, fermenting, bottling, and barrel washing. Wastewater is proposed to be irrigated into the vineyard. A referral describing the project was sent to the North Coast Regional Water Quality Control Board and the Project Review Environmental Health Specialist, which set conditions for the project's domestic and industrial wastewater disposal requirements. To ensure the project would not violate water quality standards or waste discharge requirements the applicant is required to submit a letter of acceptance of wastewater discharge requirements from the North Coast Regional Water Quality Control Board prior to obtaining building permits for any new construction. The Permit and Resource Management Department will not issue any permits until the Project Review Health Specialist has received a letter of acceptance of an application for wastewater discharge requirement from the North Coast Regional Water Quality Control Board.

- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?)

_____ X _____

Comment: A Geologic Report addressing groundwater availability was prepared by Todd Engineers, dated August 2006, along with subsequent update and clarification letters dated April 27, 2007, and June 12, 2007. According to the original report, "Cornell Farms plans to pump approximately between 3.82 and 3.98 acre feet per year (AFY; equivalent to about 2.5 gallons per minute [gpm] year-round) for groundwater from the two existing water supply wells. This usage includes irrigation for the 20-acre vineyard (2.28 gpm or 3.69 AFY) and for crushing and bottling operations, and light industrial requirements (0.18 gpm or 0.29 AFY)." (Note: The vineyards are part of the project baseline and are NOT a part of this discretionary application. "Project" water usage does not include the 3.69 AFY for the vineyard.) In the April 27, 2007, supplement, Todd concludes:

"There will be no direct and short-term hydraulic impacts to Mark West Creek or its tributaries due to project groundwater pumping. The area of influence of the pumping well could be a radial distance that ranges between 102 and 505 feet from the well after 18 hours of pumping.... The distance between the well and Mark West Creek and its tributaries is greater than 500 feet. Groundwater pumped for the project is derived ultimately from precipitation on the local watershed and percolation of that water through the unsaturated zone to the water table through the pores and fractures of the underlying rock. Groundwater pumped for the project is not derived from surface water of Mark West Creek or its tributaries.

"However, we recognize that long-term and cumulative indirect impacts to Mark West Creek and its tributaries may occur from project groundwater pumpage to surface water courses over tens of decades. This long-term impact results from removing groundwater from the aquifer that would ordinarily and eventually support the base flows of Mark West Creek and its tributaries. The project requires about 4 acre feet per year of water and return flows to the aquifer are about 2 AFY; therefore, the net usage or a loss of base flow contribution is about 2 AFY. Considering that Mark West Creek has an average annual flow of 42,671 AFY and a dry year flow of 17,600 AFY....the net loss of 2 AFY is insignificant."

Todd's June 12, 2007, letter further states: "... the Cornell Farms LLC project will have no significant direct or indirect short- or long-term or cumulative hydrologic or hydraulic impact to groundwater or surface water resources in the Mark West Creek watershed." This conclusion was based upon the assumption that the project included the vineyard, which it does not. Therefore, the impact is even less than that calculated above.

These Todd Engineer reports were reviewed by the County's peer reviewer, Kleinfelder, who, in a letter March 5, 2008, stated: "We believe Todd makes a clear and concise description of the relationship between potential groundwater, groundwater conditions and withdrawals, and their interaction with the

Mark West Creek. Their approaches are sound are within what would be considered acceptable practice and standard of care.....Our opinion is that the approach, description, calculations, and arguments in the reply Todd makes are well founded. They present a logical argument that the potential quantity of cumulative groundwater usage is a small percentage of the Mark West Creek contribution is a reasonable statement."

In response to these comments and the 2008 Mitigated Negative Declaration for the UPE07-0008 project, Christopher Bonds, Senior Engineering Geologist for the California Department of Water Resources responded in a letter dated December 3, 2008. His letter contains the following comments about the Mitigated Negative Declaration and associated technical reports:

"Based on my review of the MND and associated reports, and my technical experience in fractured rock hydrogeology, it is my opinion that the MND and associated documents do not adequately characterize the fractured bedrock aquifer underlying the proposed project and, therefore, no definitive statements regarding the potential project induced impacts to water resources can be made....The short-term airlift well test data used to evaluate the water supply for this project is not sufficient to accurately evaluate the long-term production rate of the project wells or the drawdown effects in neighboring wells or surface water features located in the vicinity of the proposed project."

He goes on to say that "Evaluation of groundwater resources in fractured bedrock is problematic due to the inherent difficulty in characterization of subsurface aquifer heterogeneity, fracture connectivity, and storativity." Thus, he recommends more in-depth aquifer testing of the project wells in order to more accurately estimate well yields and possible water level impacts to area wells and surface water features. He also recommends continued groundwater monitoring by PRMD in accord with PRMD Policy and Procedure 8-1-3.

Staff of the Regional Water Quality Control Board also expressed concern about water usage in their November 2008 letter, which states:

"It became evident from public comment during the public hearing that the cumulative impacts of land use changes within the upper Mark West Creek watershed are significantly impacting water quality and beneficial uses of water within this watershed. This reflects the potential need for a full environmental assessment, including an assessment of cumulative impacts, of the Mark West Creek watershed to determine how water quality and all beneficial uses of water are affected, prior to approval of new developments in this area....

"While the Regional Water Board realizes that solution may come out of an environmental assessment, solutions to existing water quantity issues can be employed by all landowners at this time. By carefully monitoring water usage, looking for additional opportunities for storage and using water saving principles, the existing situation will improve. The Board of Zoning Adjustments is aware of the fact that water is being trucked from late spring through early fall to one large landowner in the upper reaches of the water shed....Balancing beneficial uses within this upper watershed may be accomplished by reducing water use during critically dry years by a policy of cessation of groundwater pumping at specified dates, providing for additional onsite water storage during periods of high winter flows, and creating overstory again by planting trees to provide canopy and help reduce soil erosion and infiltrate stormwater runoff. Balancing domestic and agricultural water usage while maintaining sufficient flows to sustain viable fish populations is the goal and will require community based solutions."

As noted in the introduction to this review, the applicant has modified the project in two respects: offering of a conservation easement and inclusion of two 70,000 gallon water tanks to capture rain during the wet season for re-use during the dry season.

The Cornell parcels with 25-acres (in 2009) of irrigated vineyard are served by two wells adjacent to the Cornell residence located at 420 Wappo Road. These wells are approximately 2,700 feet north of Mark West Creek and the well heads are located at an elevation approximately 382 feet above the level of the creek. The house at 100 Wappo Road is located less than 20 feet from the top of the bank

of Mark West Creek, and the well that serves the property is located on the parcel approximately 650 feet north of the house, near a spring that feeds a pond on the property. The leach field for the house is located just north of the house, within 100 feet of the creek.

Water use for the winery that is the subject of this application was estimated at approximately 0.29 Acre Feet per Year (AFY) by Todd Engineers in their study of groundwater impacts from the project. A more project-specific figure of 0.42 AFY was developed by project civil engineer Tom Atterbury of Atterbury and Associates, as set forth in his letter dated September 14, 2009 and subsequent report dated June 3, 2010. His figures are developed in relation to the size of the wastewater system. Mr. Atterbury calculates the winery's domestic use for employees, tasting room guests, and dinner guests at 39,550 gallons per year and the winery's production water use at 96,000 gallons per year, using PRMD methodology for sizing wastewater systems. The total use equates to 135,550 gallons per year or 0.42 AFY. Water usage varies monthly, and Atterbury has characterized the monthly usage in his 2010 analysis of water use.

The June 2010 Atterbury analysis shows that with the additional water storage, no pumping will be required during the months of August, September, or October - the typical dry season for rain when vineyard irrigation may be required, and when a neighboring winery has been importing water by truck.

The property acquired by Cornell at 100 Wappo Road is 15 acres in size (of which two to four acres might be suitable for vineyard development) and has a three-bedroom house that is currently occupied (August 2010). Water use for a three-bedroom house is approximately 150 gallons per day per bedroom, or 450 gallons per day, or 164,250 gallons per year, or approximately 0.5 acre feet per year. This does not count water used for landscape irrigation, so the 0.5 AFY figure is conservative considering the 15-acre size of the parcel. Removing the house and the septic system also remove any potential for sub-surface leachate contaminating the creek, an environmental benefit.

The Conservation Easement as proposed goes further than just household use. It would remove the entire 15 acres from potential vineyard development, thus potentially conserving many more acre feet of water in close proximity to the creek (as well as avoiding the potential erosion issues related to vineyard development.)

So, removing of the house's water use from the watershed would immediately and fully offset impacts of the projected winery water use on the Mark West Creek watershed. Given the offer of the Conservation Easement by Mr. Cornell, staff did not feel that additional studies were required on the complex hydro-geological relationships of the Cornell wells with those of the neighboring vineyards and Mark West Creek. As Mr. Bond from DWR noted, "Evaluation of groundwater resources in fractured bedrock is problematic due to the inherent difficulty in characterization of subsurface aquifer heterogeneity, fracture connectivity, and storativity." In a subsequent December 21, 2009, communication, he concludes:

"...Based on my site visit, the conservation easement or deed restriction proposed in the revised MND, implementation of the PRMD's Additional Conditions of Approval, and the water monitoring/conservation measures currently in use at the Cornell vineyards, I now believe this is a reasonable proposal with respect to winery water use. The latest proposal with additional conditions more than fully offsets the proposed winery's water use and therefore, is worthy of further consideration by the Sonoma County Board of Zoning Adjustments. I also believe it would be beneficial for the applicant to incorporate some form of rainwater harvesting system into the design of the proposed winery. All of the above mentioned conditions, measures, and my suggestion, taken individually or as a whole, should provide measurable long-term benefits to the Mark West Creek Watershed."

- c) Substantially alter 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? _____

X

Comment: Construction of the project will not substantially alter the existing drainage pattern on the

site. The project is located on a knoll and avoids the drainage courses. However, the modified location will shift the run-off from the site. Instead of draining by gravity to the west and the un-named tributary of the North Fork of Mark West Creek, water would instead tend to flow off the knoll on to Wappo Road itself or into the gully that flows into the pond on the adjacent parcel (100 Wappo). Mitigations for impacts to biological resources include dust and erosion control measures. See 4.a. above. In addition, standard measures for erosion control and management of the storm water runoff will reduce the level of impact to a less than significant level. Drainage review improvements are required to be designed by a geotechnical or civil engineer in accordance with the Water Agency Flood Control Design Criteria for approval and must/are to be shown on the improvement drawings. The developer's engineer has included a site preliminary grading plan and an erosion control plan, dated May 14, 2010. The Grading and Storm Water Section of the Permit and Resource Management Department reviewed the preliminary grading plan and determined that the project appears feasible. Final issuance of a grading or building permit cannot occur until evidence is submitted and approved by the Grading and Storm Water Section of PRMD verifies that the improvements have been designed by a civil engineer in accordance with the Water Agency Flood Control Design Criteria for approval and are shown on the improvement drawings.

Drainage impacts will also be reduced because roof-top rain runoff will be collected in two 70,000 gallon tanks for re-use on landscaping during the dry season.

- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? _____ _____ X _____

Comment: See 9d above.

- e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? _____ _____ X _____

Comment: See 9d above.

- f) Otherwise substantially degrade water quality? _____ _____ X _____

Comment: Refer to 9.a. and 9.c. above. The project development requires permits to be approved by the North Coast Regional Water Quality Control Board and the Well and Septic Section of PRMD for all wastewater disposal. Compliance with State and County Standards will insure that potential impacts to water quality will be avoided.

- g) Place housing within a 100-year hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? _____ _____ _____ X

Comment: No housing is proposed in this project. Rather, removal of housing is proposed.

- h) Place within a 100-year flood hazard area structures which would impede or redirect

flood flows? _____ X

Comment: See 9.g above.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? _____ X

Comment: The winery site is not in a flood area, nor is it downstream from any water body that could empty towards it.

j) Inundation by seiche, tsunami, or mudflow? _____ X

Comment: The winery site is not in a flood area, nor is it downstream from any water body that could empty towards it.

10. **LAND USE AND PLANNING** Would the project:

Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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a) Physically divide an established community? _____ X

Comment: The project is located within an established rural vineyard area. The project would not alter the parcel's ownership, nor reconfigure existing parcels or roadways. Therefore, the project would not physically divide an established community.

b) 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? _____ X

Comment: The request for a winery complies with the Resource and Rural Development General Plan designation and other goals and policies of the County's General Plan and conforms with the RRD zoning. Agricultural Processing is defined as, "Facilities for the processing of any agricultural product grown or produced primarily on site or in the local area, storage of agricultural products grown or processed on site, and bottling or canning of any agricultural product grown or processed on site." The applicant has stated that grapes grown on-site will be used to make wine. The proposal is also consistent with the General Plan's Agricultural Element Goals, Objectives and Policies which include the following:

Goal AR 5: "Facilitate agricultural production by allowing certain agricultural support services to be conveniently and accessibly located in agricultural production areas when related to the primary agricultural activity in the area."

The location is related to and serves primarily the agricultural activity of vineyards and the adjacent site is planted in vines.

The following Goals, Objectives and Policies of the Sonoma County General Plan apply to other issues of this project, namely geology, hydrology, and safety:

Goal LU-7: Prevent unnecessary exposure of people and property to environmental risks and hazards. Limit development on lands that are especially vulnerable or sensitive to environmental damage.

Objective LU-7.1: Restrict development in areas which are constrained by the natural limitations of the land, including but not limited to, flood, fire, geologic hazards, groundwater availability, and septic suitability.

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

RC-2d: Require a soil conservation program to reduce soil erosion impacts for discretionary projects which could increase waterway or hillside erosion. Design improvements such as roads and driveways to retain natural vegetation and topography to the extent feasible.

Objective RC-8.1: Identify sources of sediment and erosion and minimize their impact on local water courses.

RC-8c: Design public and private projects to minimize damage to the stream environment and to maintain instream flows.

Goal PS-1: Prevent unnecessary exposure of people and property to risks of damage or injury from earthquakes, landslides and other geologic hazards.

Objective PS-1.2: Regulate new development to reduce the risks of damage and injury from known geologic hazards to acceptable levels.

PS-1f: Require and review geologic reports prior to decisions on any project which would subject property or persons to significant risks from the geologic hazards shown on Figures PS-1a through PS-1i (pages 257 through 273) and related file maps and source documents. Geologic reports shall describe the hazards and include mitigation measures to reduce risks to acceptable levels. Where appropriate, require an engineer's or geologist's certification that risks have been mitigated to an acceptable level and, if indicated, obtain indemnification or insurance from the engineer, geologist, or developer to minimize County exposure to liability.

Comment: The issues covered by these policies and objectives are addressed elsewhere in this Initial Study in sections relating to Geology and Hydrology and Water Quality. A geotechnical report and a hydrogeological analysis were submitted and reviewed by consulting geologists retained by the County. The following measure addresses the implementation of said reports.

Mitigation Measure: See Mitigation Measures in 6.a above.

Mitigation Monitoring: See Mitigation Measures 6.a above.

Goal PS-3.1: Prevent unnecessary exposure of people and property and property to risks of damage or injury from wildland and structural fires.

Objective PS3.2: Regulate new development to reduce the risks of damage and injury from known fire hazards to acceptable levels.

PS-3b: Consider the severity of natural fire hazards, potential damage from wildland and structural fires, adequacy of fire protection and mitigation measures consistent with this element in the review of projects.

PS-3d: Require on-site detection and suppression, including automatic sprinkler systems, where available services do not provide acceptable levels of protection.

Comment: The site is located on a knoll where substantial brush clearing occurred in 2005, providing a significant fire safe buffer around a portion of the proposed facility. The project must conform to Fire Safe Standard requirements for commercial uses related to fire sprinklers, emergency vehicle access, and water supply. These provisions reduce the potential exposure to people or structures to a less than significant level. No mitigation is required.

Policy OSRC-11e: 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.

Comment: Retention and restoration of vegetation are discussed above in the section on Biological Resources.

- c) Conflict with any applicable habitat conservation plan or natural community conservation plan? X

Comment: The project site is not within the Valley Oak Habitat Combining District. The project is not located within any other habitat conservation plan or natural community conservation plan area.

11. **MINERAL RESOURCES** Would the project: Potentially Significant Impact with Mitigation Incorporation Less than Significant Impact Less than Significant Impact No Significant Impact

- a) 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? X

Comment: The project will not result in the loss of a known mineral resource.

- b) 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? X

Comment: The Sonoma County General Plan does not designate the project site as within a known mineral resource deposit area.

12. **NOISE** Would the project result in: Potentially Significant Impact with Mitigation Incorporation Less than Significant Impact Less than Significant Impact No Significant Impact

- a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? X

Comment: The Sonoma County Noise Element of the General Plan establishes objectives, policies and performance standards for noise producing land uses that may affect noise sensitive land uses and vice versa. Wineries are recognized as a source of community noise because they are typically located in quiet rural areas. Exterior noise primarily occurs during the crush season and is usually less than 60 dBA at distances greater than 300 feet. The Project Review Health Specialist reviewed the project and determined that no noise study was necessary based on the distance to the off-site nearest residence, which is approximately 1,100 feet from the proposed construction of the winery.

- b) Exposure of persons to or generation of excessive groundborne vibration or ground borne noise levels? _____ X _____

Comment: Construction of the new building and cave may generate ground borne vibration and noise. These levels would not be excessive or significant as they would be limited to the construction period and would occur during normal business hours. In addition, the project site is more than 1,100 feet away from the nearest off site residences. Otherwise there are no other activities or uses associated with the project that would expose persons to or generate any excessive ground borne vibration or ground borne noise levels.

- c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? _____ X _____

Comment: See 12 a.

- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? _____ X _____

Comment: See 12 a.

- e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? _____ X _____

Comment: The project site is not within an adopted airport land use plan.

- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? _____ X _____

Comment: The project is not located within the vicinity of a known private airstrip.

Significant Impact Significant Impact with Mitigation Incorporation Significant Impact Impact

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

_____ _____ _____ X

Comment: The project would not directly or indirectly induce substantial population growth in the area because it would not add to local housing and would not provide infrastructure needed to support the development of new housing.

b) Displace substantial numbers of existing housing necessitating the construction of replacement housing elsewhere?

_____ _____ X _____

Comment: The project would not displace "substantial numbers" of existing housing but it would remove one house to offset the water demand of the project.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

_____ _____ _____ X

Comment: See Comment 13.b

14. **PUBLIC SERVICES**

Potentially Significant Impact Less than Significant Impact with Mitigation Incorporation Less than Significant Impact No Impact

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?	_____	_____	<u> X </u>	_____
Police protection?	_____	_____	_____	<u> X </u>
Schools?	_____	_____	_____	<u> X </u>
Parks?	_____	_____	_____	<u> X </u>
Other public facilities?	_____	_____	_____	<u> X </u>

Comment: The project will not require additional public services or new or physically altered governmental facilities. It must comply with all applicable fire codes including emergency access, water supply and appliances, building sprinklers, alarm systems, and extinguishers. All applicable fire protection measures would be required with any new construction. The project would not have a substantial adverse effect on associated governmental facilities, therefore potential impacts to these agencies is considered less than significant.

15. **RECREATION** Would the project: Potentially Significant Less than Significant Impact with Mitigation Incorporation Less than Significant Impact No Impact

a) Would the project 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? ___ ___ X ___

Comment: The proposed project is considered agricultural processing and is not a residential or recreational use. It would not cause an increase in the use of parks in the area. Although Bothe-Napa State Park abuts the northern boundary of the Cornell holdings, the park entrance is not located on St. Helena Road and is a considerable distance from the proposed winery with access from Napa County and Highway 29.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? ___ ___ ___ X

Comment: The project does not include recreational facilities.

16. **TRANSPORTATION/TRAFFIC** Would the project: Potentially Significant Less than Significant Impact with Mitigation Incorporation Less than Significant Impact No Impact

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? ___ ___ ___ X

Comment: Three transportation-related plans have been adopted in Sonoma County: the GP2020

Circulation Element, the Sonoma County Transportation Authority Comprehensive Transportation Plan (2009), and the Sonoma County Bikeways Plan. The project is located in a remote part of the county that is not served by public or mass transit. St. Helena Road has less than 1,000 trips per day. The county does not have a plan, ordinance, or policy that measures the effectiveness of the performance of the circulation system in remote rural areas such as those where the current project is located. The SCTA plans and GP2020 policies are oriented toward urban and suburban development and creating a system that encourages transit oriented development while maintaining adequate road capacity for anticipated vehicle usage. The SCTA Comprehensive Transportation Plan does contain a policy affirming the County's GHG goals (discussed above) and includes a Class III bikeway along 6.47 miles of St. Helena Road, a "low" priority funding project. The project would not conflict with the adopted plans and acknowledges the GHG goals.

- b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? _____ X

Comment: See 16a.

- c) 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? _____ X

Comment: No. See 16a.

- d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? _____ X

Comment: The Sonoma County Department of Transportation and Public Works has reviewed the project and determined that its construction will not increase hazards. The project does not propose any changes to the existing road network.

- e) Result in inadequate emergency access? _____ X

Comment: With the review by Dept. of Emergency Services personnel on new construction for compliance with Fire Safe Standards, the project will not result in inadequate emergency access.

- f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? _____ X

Comment: No. See 16a.

g) Result in inadequate parking capacity? _____ X _____

Comment: The project provides eight designated parking places. Only 15 guests are allowed at one time, and the eight onsite parking places should be sufficient to handle guests and the staff to serve them in combination with additional pad space and driveways. Sufficient parking exists on the property to accommodate guests and to avoid any impacts offsite, i.e. the need to park on public streets.

17. **UTILITIES AND SERVICE SYSTEMS**

Would the project:

Potentially Significant	Less than Significant Impact	Less than Significant Impact with Mitigation Incorporation	No Significant Impact
-------------------------	------------------------------	--	-----------------------

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? _____ X _____

Comment: The wastewater disposal system must be reviewed and approved (or the need for a permit waived due to the small size of the proposed facility) by the North Coast Regional Water Quality Control Board (NCRWQB). Through this review and the Well and Septic Section of PRMD permitting process, the project must be designed not to exceed wastewater treatment requirements.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? _____ X _____

Comment: See response to 17.a. above in this initial study. The proposed project is not served by public sewer and all process wastewater will be treated onsite and disposed in a sub-surface septic system and irrigated on the vines. Permits are required by the NCRWQCB and clearance by the Well and Septic Section of PRMD prior to issuance of building permits.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? _____ X _____

Comment: The project will not require the expansion of any public storm water system or cause significant environmental effects. Drainage improvements will be required, but will be onsite improvements designed to avoid significant environmental effects from sedimentation of nearby creeks. Conditions will require that any drainage improvements be designed by a civil engineer in accordance with the Water Agency Flood Control Design Criteria for approval by the Director of the Permit and Resource Management and be shown on the improvement drawings.

- d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? ___ ___ X ___

Comment: The Groundwater Availability Report prepared by Todd Engineers states, "due to the presence of successful existing wells on the property, which have been used to irrigate the vineyards without reported problems, and our groundwater modeling results, we anticipate the availability of water for the planned increase in winery production is good and should not significantly impact groundwater availability on adjacent residential parcels." There is no indication that there would be insufficient water to serve the project, and no new entitlements are required. As noted in the discussion of hydrology in Section 9 above, the project involves giving up certain water rights to offset that used by the winery, and the project includes a rainwater detention system to avoid peak dry season well pumping.

- e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? ___ ___ ___ X

Comment: The project is not served by a wastewater treatment provider. Any expansion to the existing system must be permitted through the Well and Septic Section of PRMD and the NCRWQCB.

- f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? ___ ___ X ___

Comment: Sonoma County has a solid waste management program that provides solid waste collection and disposal services for the entire County. The program can accommodate the permitted collection and disposal of the waste that would result from the proposed project. Grape pomace from the processing of the grapes into wine will be composted and tilled into the vineyard.

- g) Comply with federal, state, and local statutes and regulations related to solid waste? ___ ___ X ___

Comment: A referral describing the project was sent to the Project Review-Health Specialist, who required as a condition of approval that prior to issuance of any related building permit, the applicant shall submit a design for trash enclosures for review and approval to PRMD-Building as a part of the building permit process. This will ensure the winery facility complies with local regulations for solid waste.

18. MANDATORY FINDINGS OF SIGNIFICANCE

Yes No

- a) Does the project have the potential to degrade the quality of the environment, 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? _____ X

Comment: The project site is developed with existing structures, an adjacent vineyard, and fencing. The project development does not include any work within a creek. The project would not substantially interfere with the movement of migratory fish or wildlife species. While the project site has some habitat for sensitive species that could be affected by the project, mitigation measures are included to avoid or reduce impacts to the species. Potential impacts from erosion of site sediment into a tributary of Mark West Creek is a concern relative to fish habitat, particularly salmonids. Mitigation measures to reduce erosion and siltation are included in the project to reduce impacts to less than significant.

- b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? _____ X

Comment: Cumulative projects include the past removal of timber, planting of grapes, and construction of structures and other improvements on the site, as well as development of residential, agricultural, and winery uses in the project area. These projects have not resulted in any significant effects to which the project would make a cumulatively considerable contribution. All project impacts would be mitigated to a Less than Significant level on both a project and cumulative level. In particular, the Groundwater Study demonstrates that cumulative impacts would be less than significant, and the applicant has agreed to measures to completely offset his water use in the watershed, and to avoid pumping water for the winery during August, September, or October. Traffic mitigation fees are required to be paid to assist with the overall County roadways maintenance costs. Nevertheless, potential cumulative impacts from erosion of site sediment into a tributary of Mark West Creek is a concern relative to fish habitat, particularly salmonids. Mitigation measures to reduce erosion and siltation are included in the project to reduce impacts to less than significant.

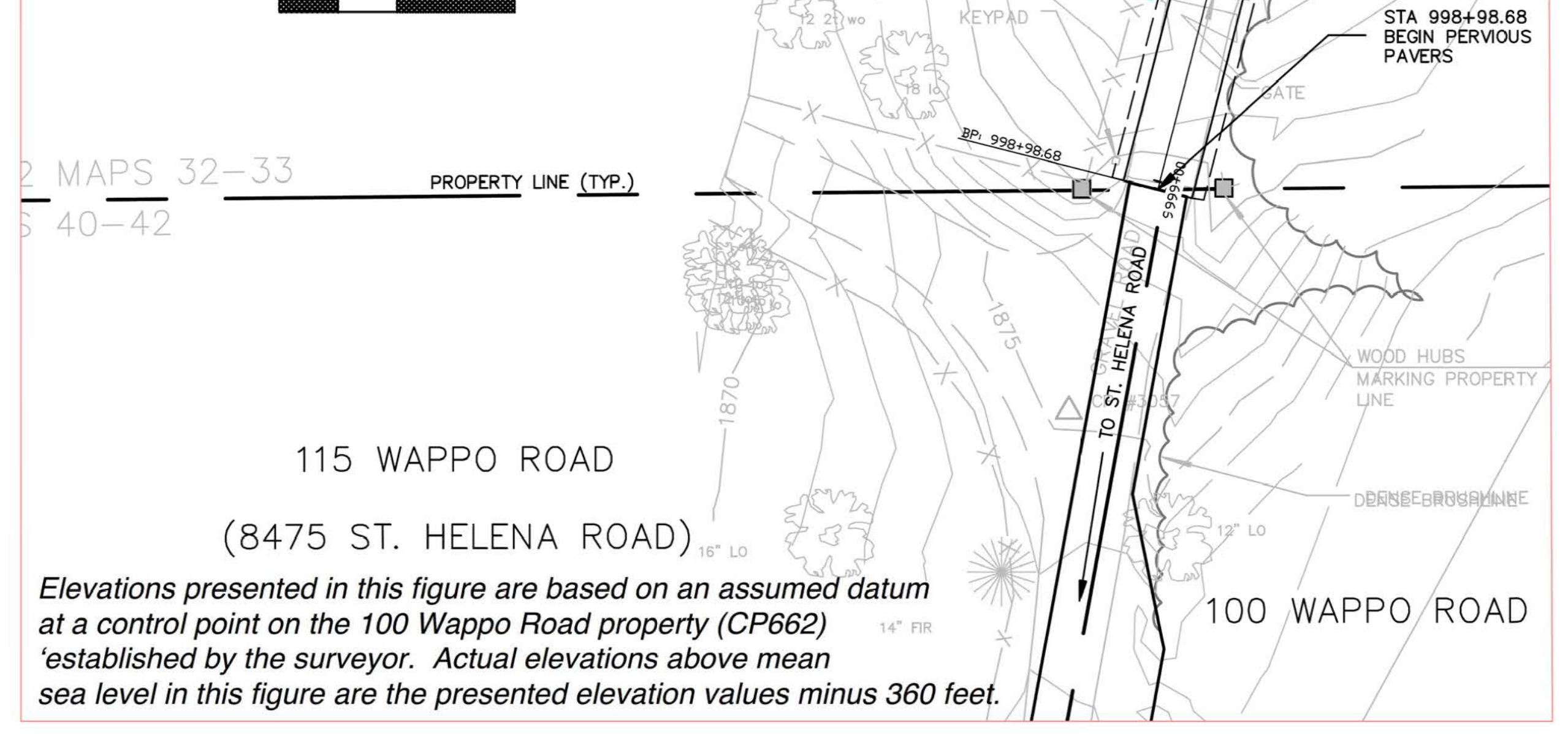
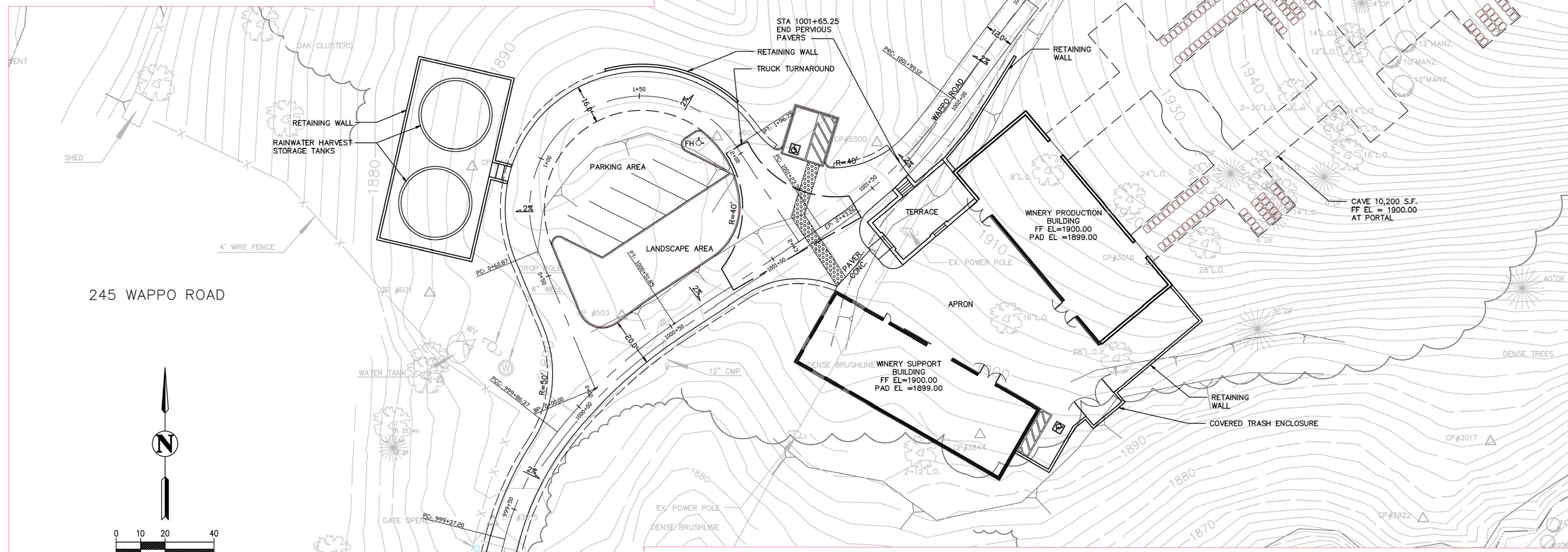
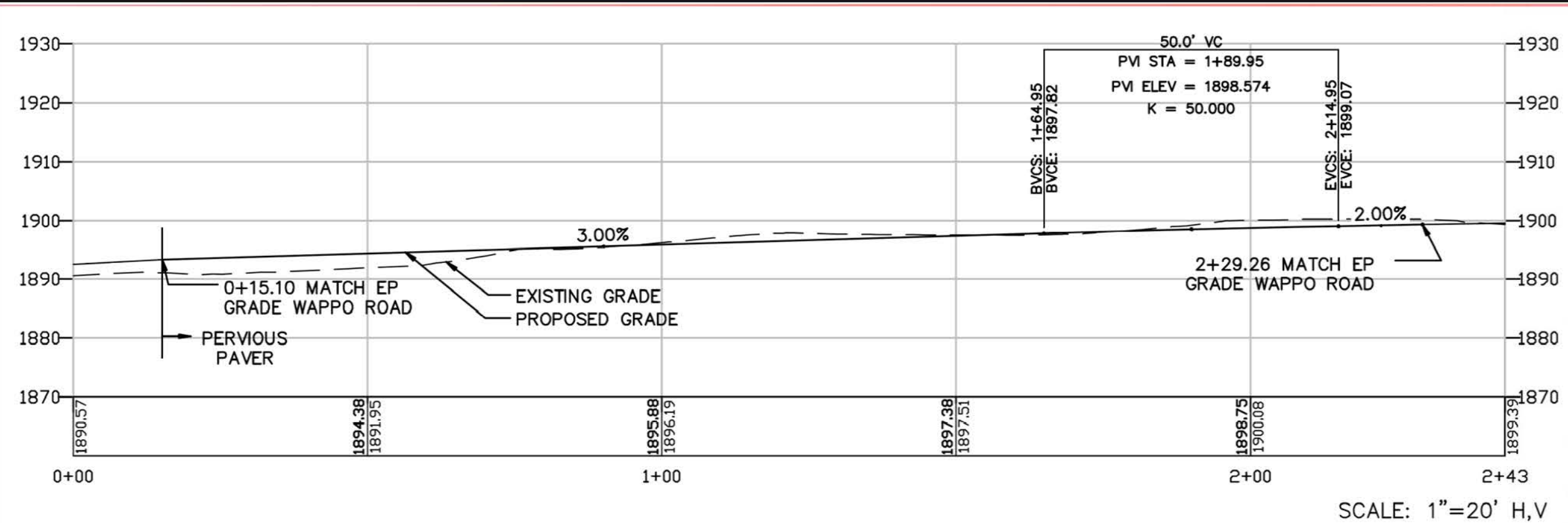
- c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? _____ X

Comment: The project would result in only minimal changes to the existing environment. All impacts will be mitigated to less than significant. Mitigation Measure 1.d.1 requires that all new exterior lights be shielded, which would ensure that the project would not intensify any environment effect to the detriment of residents or employees in the area. Geologic issues are mitigated through the implementation of the Geologic Study and the required Geotechnical Study. Biotic issues are mitigated through implementation of recommendations in the Biological Resources Assessment.

APPENDIX PD

Project Description

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REVISION	DESCRIPTION	BY	DATE

ATTERBURY & ASSOCIATES, INC.
 Civil Engineering - Land Planning
 16109 Healdsburg Avenue, Suite D, Healdsburg, CA 95448
 Phone: (707) 433-0134; Fax: (707) 433-0135

APN 028-260-041

SITE DRIVEWAY PLAN & PROFILE
 Henry Cornell Winery
 245 Wappo Road
 Santa Rosa, CA

Date: 12/06/11
 Scale: AS SHOWN
 Drawn: MRS
 Job: 05-25
 Sheet: **C5**

2 MAPS 32-33
 5 40-42
 245 WAPPO ROAD
 115 WAPPO ROAD
 (8475 ST. HELENA ROAD)
 Elevations presented in this figure are based on an assumed datum at a control point on the 100 Wappo Road property (CP662) established by the surveyor. Actual elevations above mean sea level in this figure are the presented elevation values minus 360 feet.

CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	67.87'	80.00'	48°36'28"
C2	44.41'	60.00'	42°24'26"
C3	92.35'	85.00'	62°14'54"

LINE TABLE		
LINE	LENGTH	BEARING
L1	127.48	S49°29'37"W
L2	170.96	S0°53'08"W
L3	185.29	S41°31'18"W

LANDS OF GRINNELL
8545 ST. HELENA RD
APN 028-250-014

LANDS OF GRINNELL
8545 ST. HELENA RD
APN 028-250-014

8565 ST. HELENA RD
APN 028-250-018

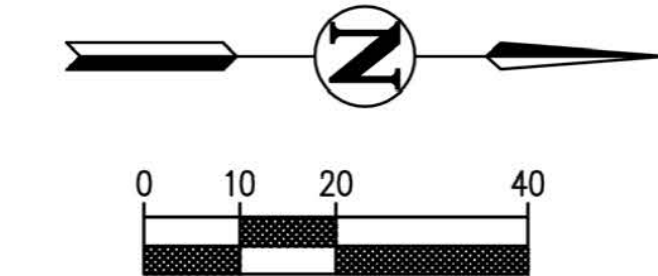
18" WIDE 1 1/2" MINUS CRUSHED ROCK SHOULDER.
ROLLED AND CONSOLIDATED IN PLACE.
SHOULDER SHALL MATCH PAVEMENT ELEVATION.

INSTALL 1 1/2" MINUS CRUSHED ROCK
FROM EP TO TOE OF SLOPE. KEY
ROCK INTO SLOPE. REFER TO DETAIL
SHEET C18.

Legend

- CENTERLINE WAPPO ROAD/PROPERTY LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED EDGE OF CHIP SEALED ROAD
- PROPOSED EDGE OF GRAVEL ROAD
- EXISTING EDGE OF GRAVEL ROAD
- EXISTING 20' EASEMENT
- EXISTING CL OF ST HELENA ROAD
- PROPERTY LINE
- EXISTING FENCE LINE
- DAYLIGHT LINE
- PAVED SURFACE
- CHIP SEALED SURFACE
- GRAVEL SURFACE
- VEGETATED BUFFER

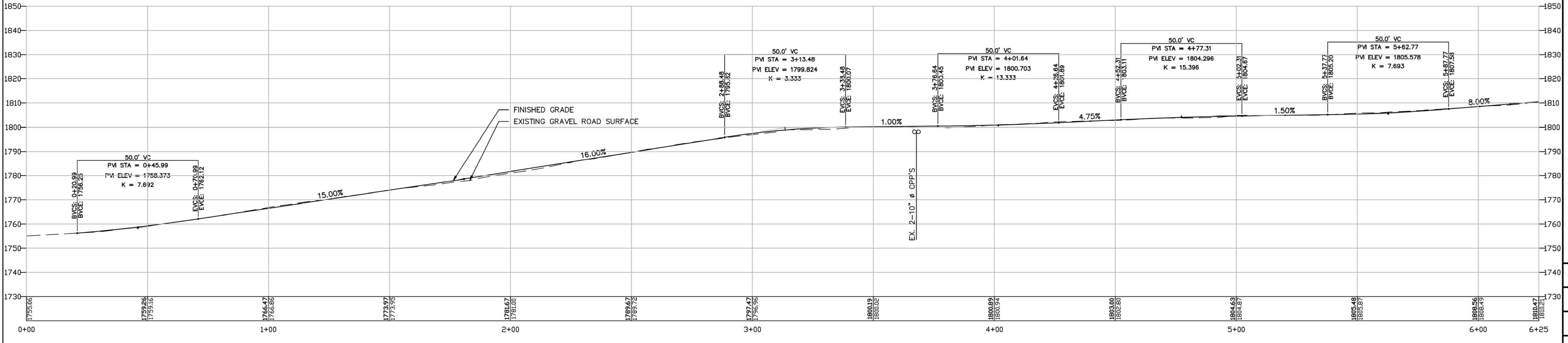
20' NON EXCLUSIVE EASEMENT FOR
INGRESS, EGRESS, ROADWAY AND
ALL PURPOSES INCIDENTAL THERETO
D.N. 2005-100557 OR, S.C.R. AS
SURVEYED BY CURTIS ASSOCIATES.



LANDS OF GRINNELL
115 WAPPO ROAD
APN 028-250-006

LANDS OF CORNELL
100 WAPPO ROAD
APN 028-250-007

Elevations presented in this figure are based on an assumed datum
at a control point on the 100 Wappo Road property (CP662)
'established by the surveyor. Actual elevations above mean
sea level in this figure are the presented elevation values minus 360 feet.



PROFILE VIEW OF WAPPO ROAD (STA 0+00 - 6+25)

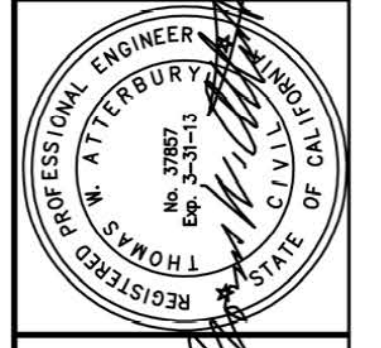
PROFILE CONTINUED ON SHEET C11

SCALE 1"=20' H&V

REVISION	DESCRIPTION	BY	DATE

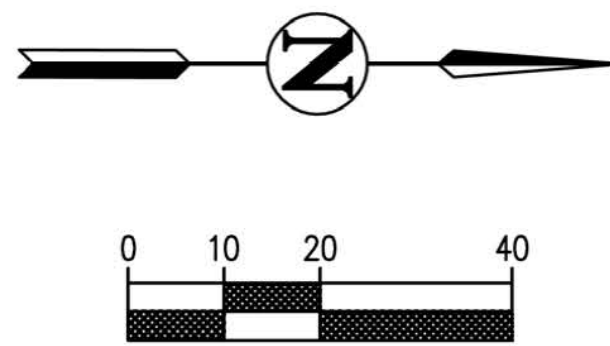
ATTERBURY & ASSOCIATES, INC.
Civil Engineering - Land Planning
16109 Healdsburg Avenue, Suite D, Healdsburg, CA 95448
Phone: (707) 433-0134 Fax: (707) 433-0135

APN 028-260-041



PLAN AND PROFILE
WAPPO ROAD: STA 0+00 - 6+25
Henry Cornell Winery
245 Wappo Road
Santa Rosa, CA

Date: 12/06/11
Scale: AS SHOWN
Drawn: MRS
Job: 05-25
Sheet: **C10**

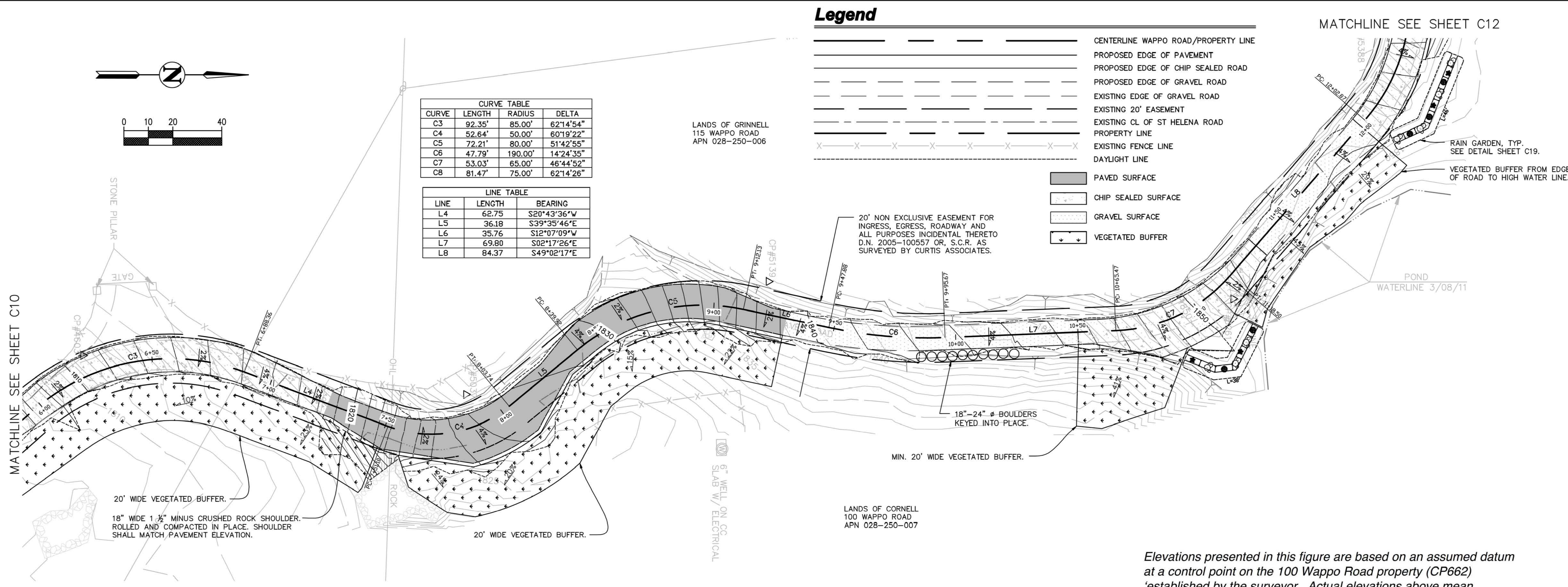


CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C3	92.35'	85.00'	62°14'54"
C4	52.64'	50.00'	60°19'22"
C5	72.21'	80.00'	51°42'55"
C6	47.79'	190.00'	14°24'35"
C7	53.03'	65.00'	46°44'52"
C8	81.47'	75.00'	62°14'26"

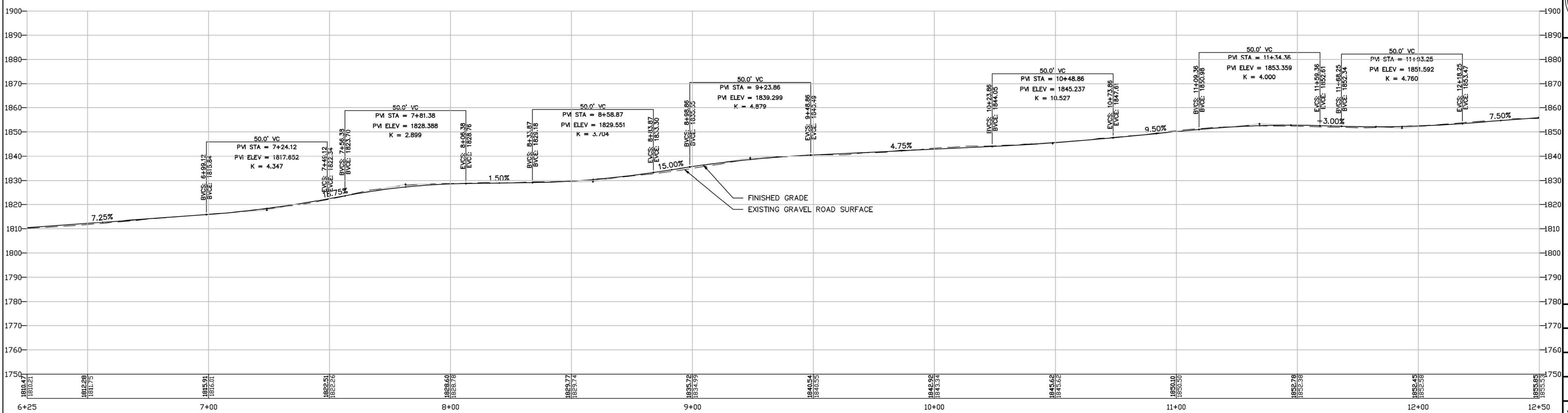
LINE TABLE		
LINE	LENGTH	BEARING
L4	62.75	S20°43'36"W
L5	36.18	S39°35'46"E
L6	35.76	S12°07'09"W
L7	69.80	S02°17'26"E
L8	84.37	S49°02'17"E

Legend

- CENTERLINE WAPPO ROAD/PROPERTY LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED EDGE OF CHIP SEALED ROAD
- PROPOSED EDGE OF GRAVEL ROAD
- EXISTING EDGE OF GRAVEL ROAD
- EXISTING 20' EASEMENT
- EXISTING CL OF ST HELENA ROAD
- PROPERTY LINE
- EXISTING FENCE LINE
- DAYLIGHT LINE
- PAVED SURFACE
- CHIP SEALED SURFACE
- GRAVEL SURFACE
- VEGETATED BUFFER



Elevations presented in this figure are based on an assumed datum at a control point on the 100 Wappo Road property (CP662) established by the surveyor. Actual elevations above mean sea level in this figure are the presented elevation values minus 360 feet.



PROFILE CONTINUED FROM SHEET C10

PROFILE VIEW OF WAPPO ROAD (STA 6+25 - 12+50) SCALE 1"=20' H&V

PROFILE CONTINUED ON SHEET C12

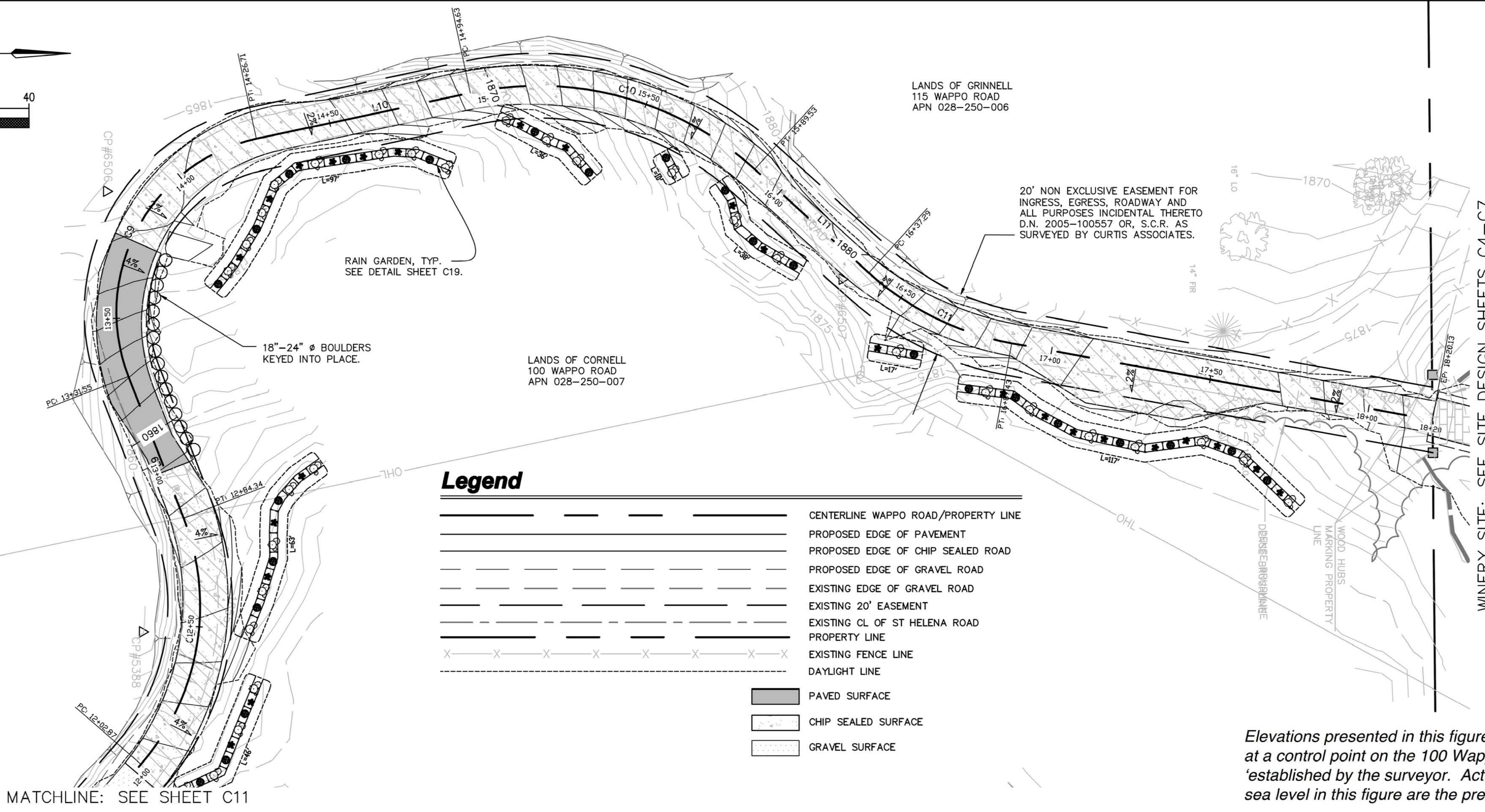
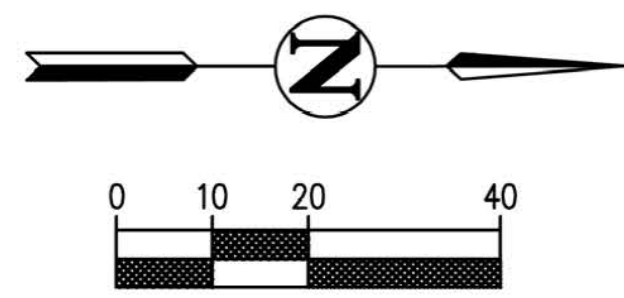
REVISION	DESCRIPTION	BY	DATE

ATTERBURY & ASSOCIATES, INC.
Civil Engineering - Land Planning
18109 Healdsburg Avenue, Suite D, Healdsburg, CA 95448
Phone: (707) 432-0134, Fax: (707) 432-0135

APN 028-260-041

PLAN AND PROFILE
WAPPO ROAD: STA 6+25-12+50
Henry Cornell Winery
245 Wappo Road
Santa Rosa, CA

Date: 12/06/11
Scale: AS SHOWN
Drawn: MRS
Job: 05-25
Sheet: C11



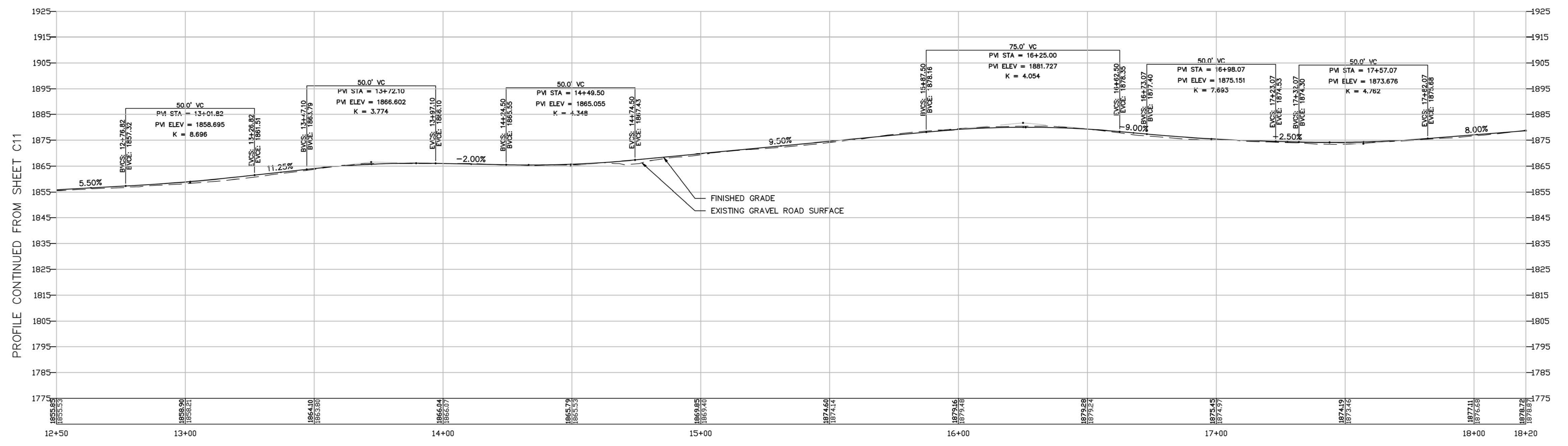
CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C8	81.47'	75.00'	62°14'26"
C9	95.16'	55.00'	99°08'05"
C10	94.91'	100.00'	54°22'42"
C11	50.13'	90.00'	31°54'52"

LINE TABLE		
LINE	LENGTH	BEARING
L9	47.21	N68°43'16"E
L10	67.91	S12°08'39"E
L11	47.76	S42°14'03"W
L12	132.70	S10°19'11"W

Legend

- CENTERLINE WAPPO ROAD/PROPERTY LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED EDGE OF CHIP SEALED ROAD
- PROPOSED EDGE OF GRAVEL ROAD
- EXISTING EDGE OF GRAVEL ROAD
- EXISTING 20' EASEMENT
- EXISTING CL OF ST HELENA ROAD
- PROPERTY LINE
- EXISTING FENCE LINE
- DAYLIGHT LINE
- PAVED SURFACE
- CHIP SEALED SURFACE
- GRAVEL SURFACE

Elevations presented in this figure are based on an assumed datum at a control point on the 100 Wappo Road property (CP662) established by the surveyor. Actual elevations above mean sea level in this figure are the presented elevation values minus 360 feet.



PROFILE VIEW OF WAPPO ROAD (STA 12+50 - 18+20) SCALE 1"=20' H&V

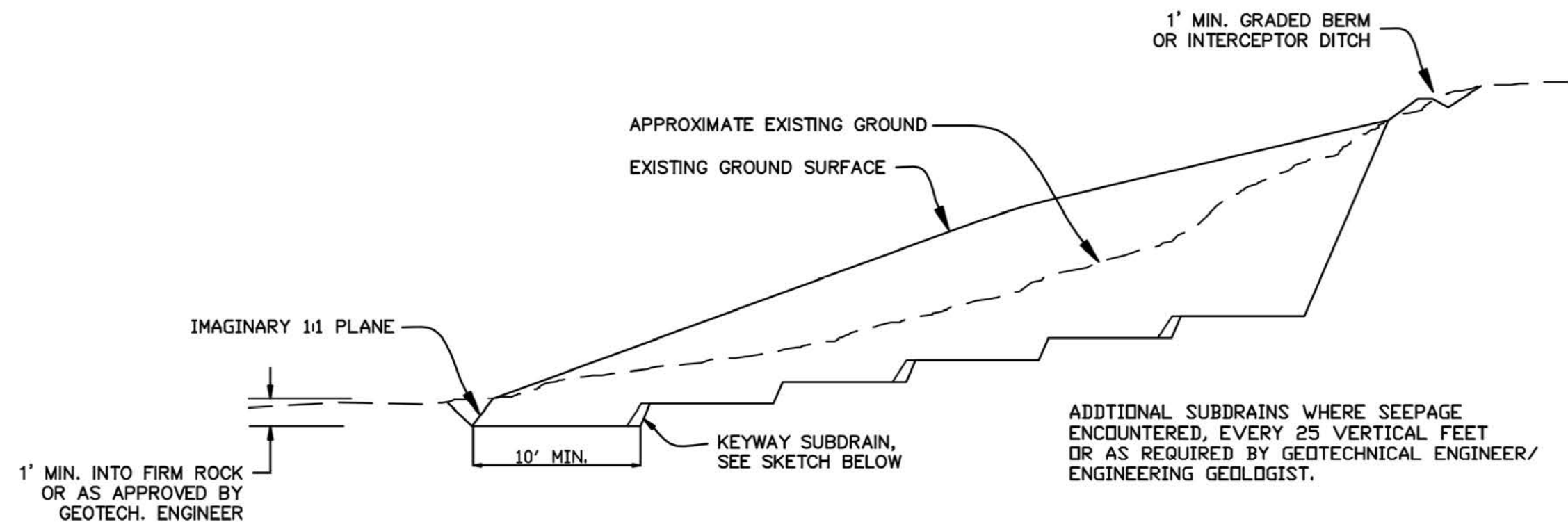
REVISION	DESCRIPTION	BY	DATE

ATTERBURY & ASSOCIATES, INC.
 Civil Engineering - Land Planning
 16109 Healdsburg Avenue, Suite D, Healdsburg, CA 95448
 Phone: (707) 433-0134, Fax: (707) 433-0135

PLAN AND PROFILE
 WAPPO ROAD: STA 12+50-18+20
 Henry Cornell Winery
 245 Wappo Road
 Santa Rosa, CA

Date: 12/06/11
 Scale: AS SHOWN
 Drawn: MRS
 Job: 05-25
 Sheet:

C12



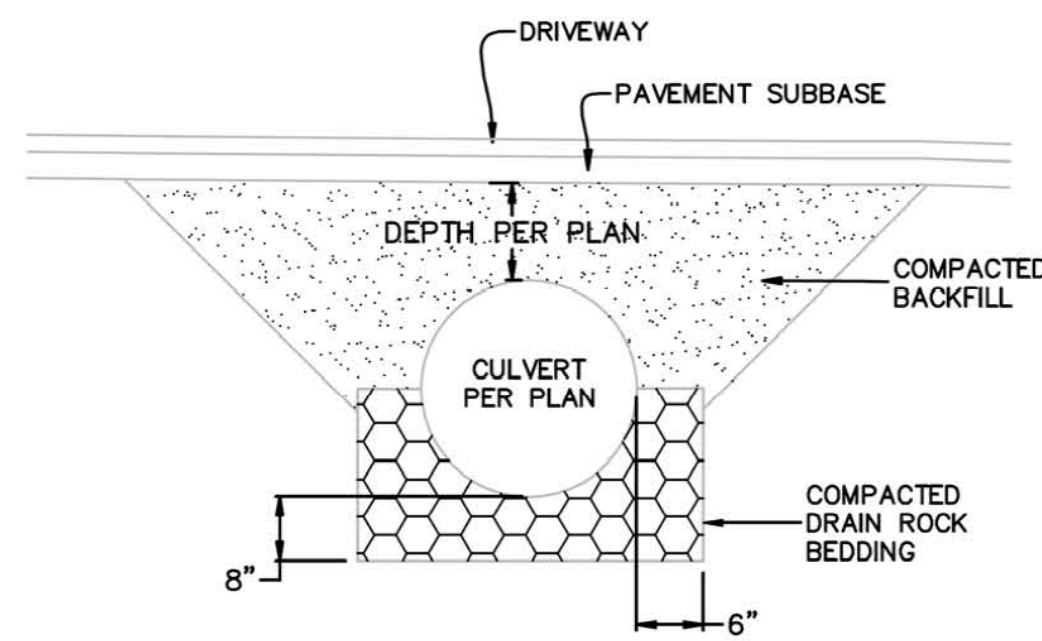
STABILIZE PER SEDIMENT AND EROSION CONTROL

NOTES:

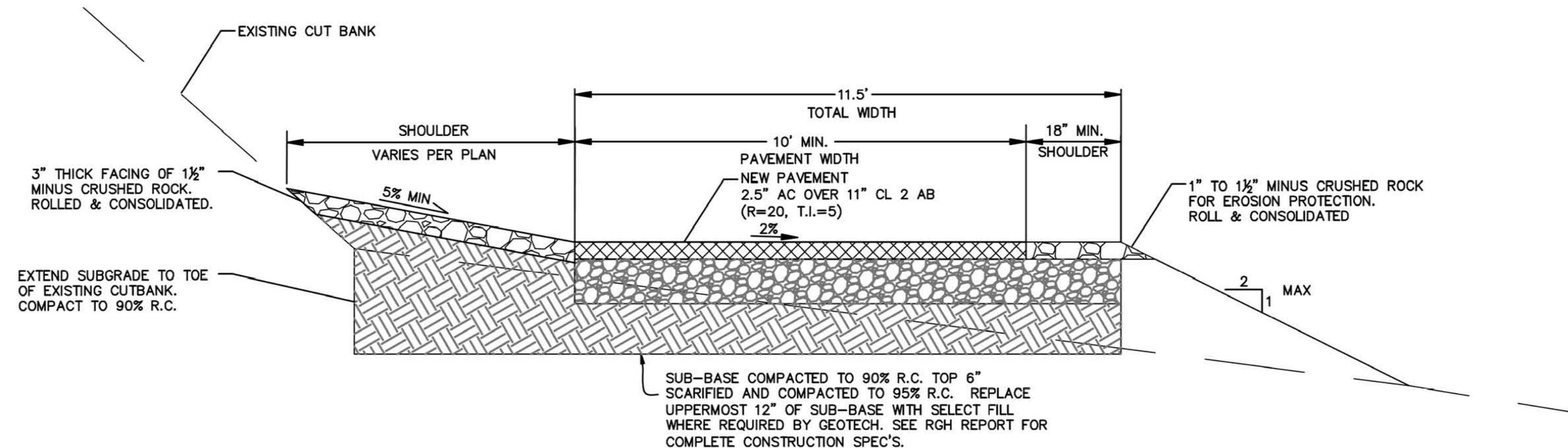
- KEYWAY EXCAVATION AND SUBDRAIN INSTALLATION SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER/ENGINEERING GEOLOGIST.
- THIS DETAIL IS NOT TO SCALE. REFER TO GRADING PLAN FOR ACTUAL ELEVATIONS AND GEOTECH. REPORT FOR COMPLETE INSTALLATION SPECIFICATIONS.
- REMOVE AND STOCKPILE EXISTING TOPSOIL (SEE GEOTECH. REPORT FOR APPROXIMATE DEPTH, ETC.). AREA TO RECEIVE EXCESS MATERIALS SHALL BE SANCTIONED BY RGH, STRIPPED OF TOPSOIL, PLACED WITH MOISTURE, ROLLED AND COMPACTED. UPON COMPLETION OF EXCESS SPOILS PLACEMENT, CAP OFF WITH TOPSOIL STRIPPINGS AND STABILIZE PER SEDIMENT AND EROSION CONTROL SPECIFICATIONS ON SHEET 1.
- EXCAVATE KEYWAY AND BENCHES INTO FIRM BEDROCK OR AS APPROVED BY GEOTECHNICAL ENGINEER.
- ALL KEYWAY FILLS SHALL BE COMPACTED TO 90% RELATIVE COMPACTION.

LEVEL BENCHES SHOULD BE CUT INTO FIRM BEDROCK, SEE GEOTECHNICAL REPORT FOR COMPLETE CONSTRUCTION SPECIFICATIONS

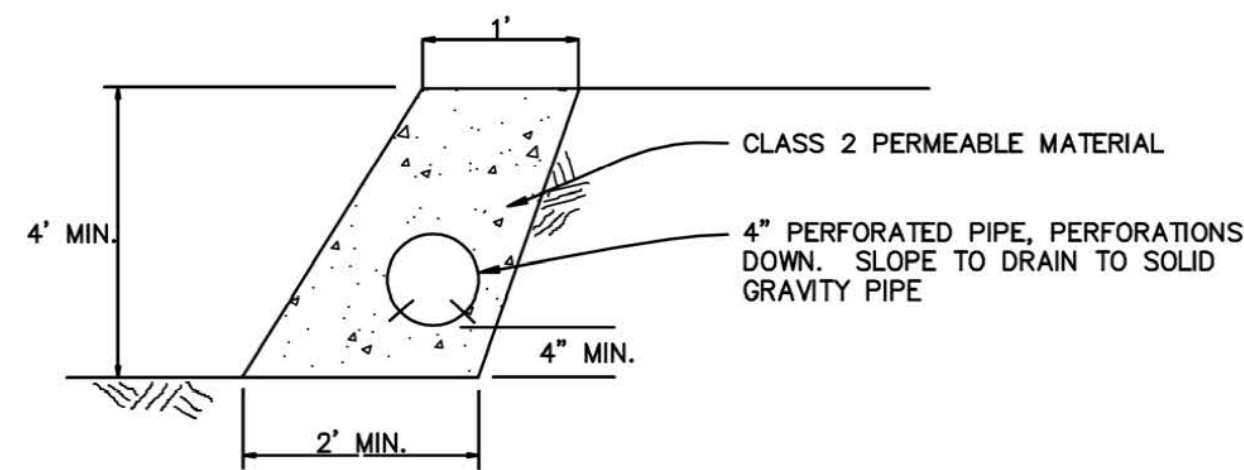
KEYWAY DETAIL
NTS



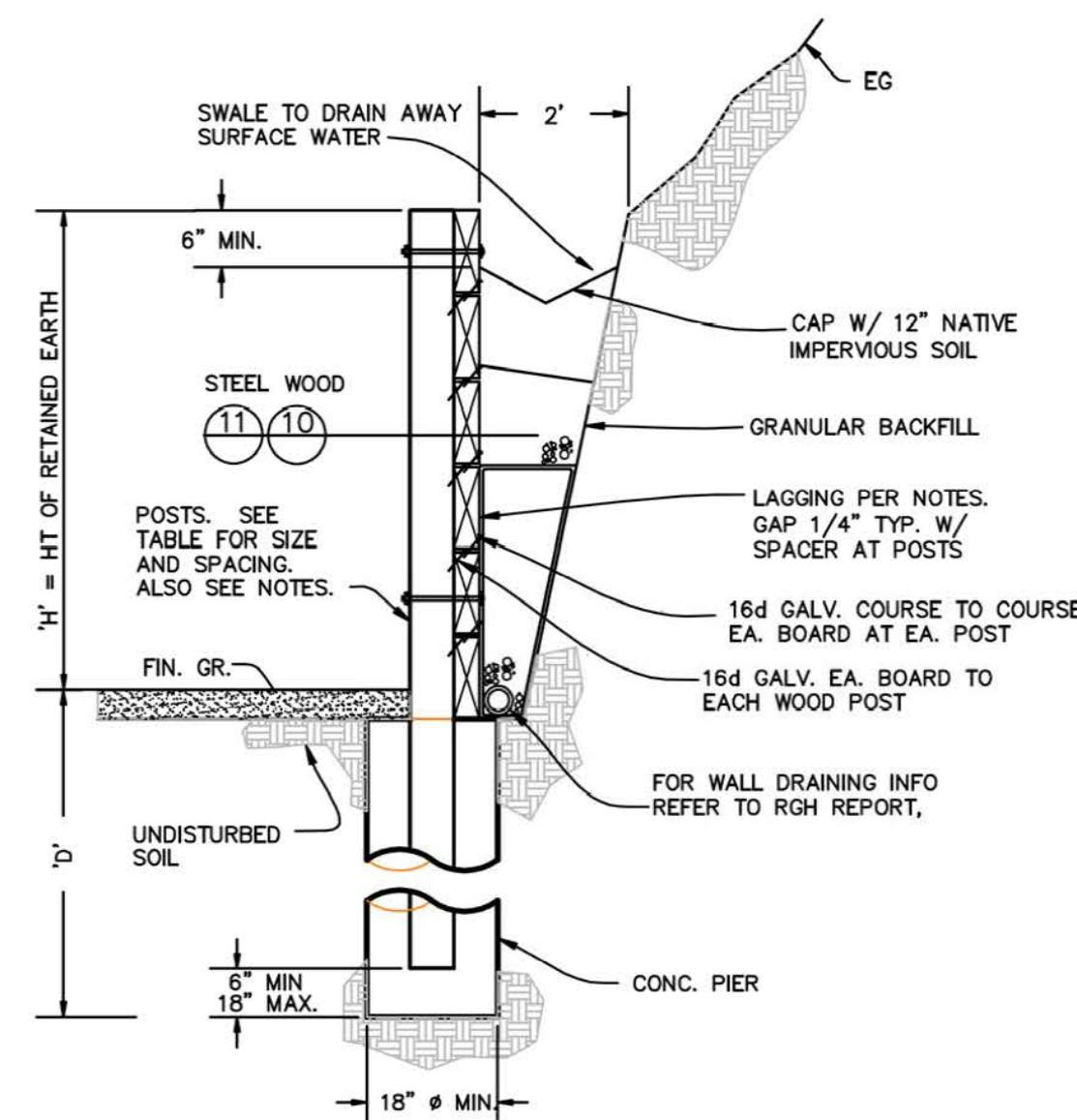
CULVERT CROSSING DETAIL
NTS



TYPICAL PAVING SECTION STA 0+25 - 3+35
NTS



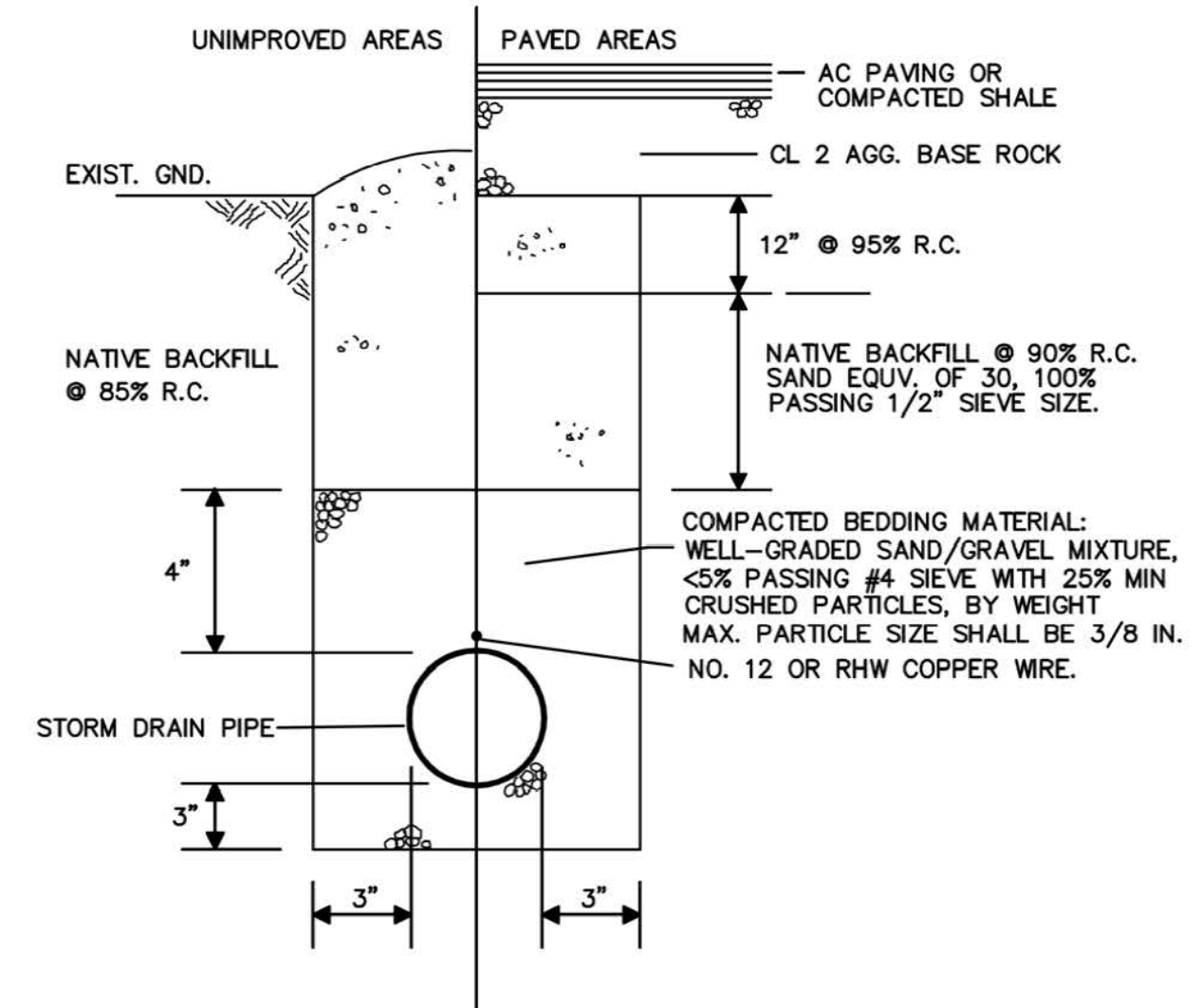
KEYWAY SUBDRAIN
NTS



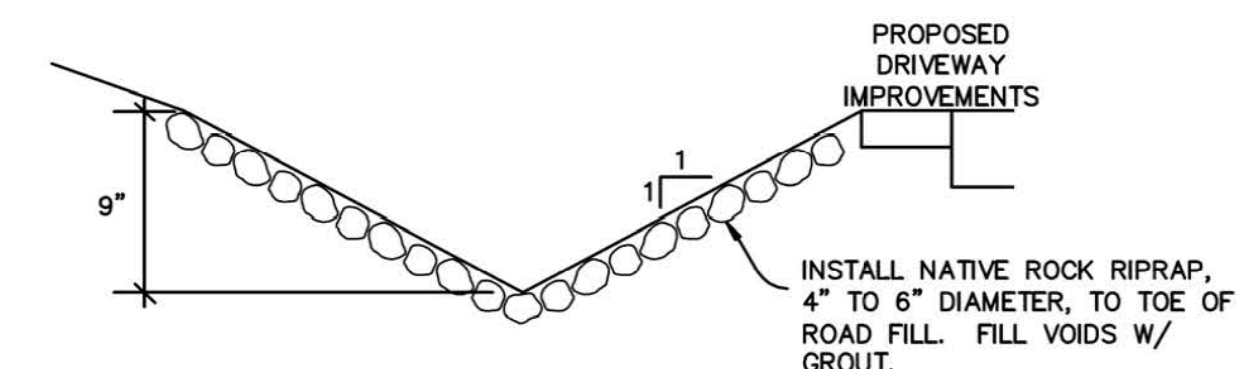
'H' (MAX)	POSTS		MAX. POST SPACING	'D' (MIN)
	WOOD	STEEL		
4'-0"	8x8	W 4 x 13	8' O.C.	6'
6'-0"	10x12	W 6 x 20	8' O.C.	9'
8'-0"	NOT ALLOWED	W 8 x 21	6' O.C.	11'
10'-0"	NOT ALLOWED	W 10 x 30	6' O.C.	14'

WOOD RETAINING WALL DETAIL
N.T.S.

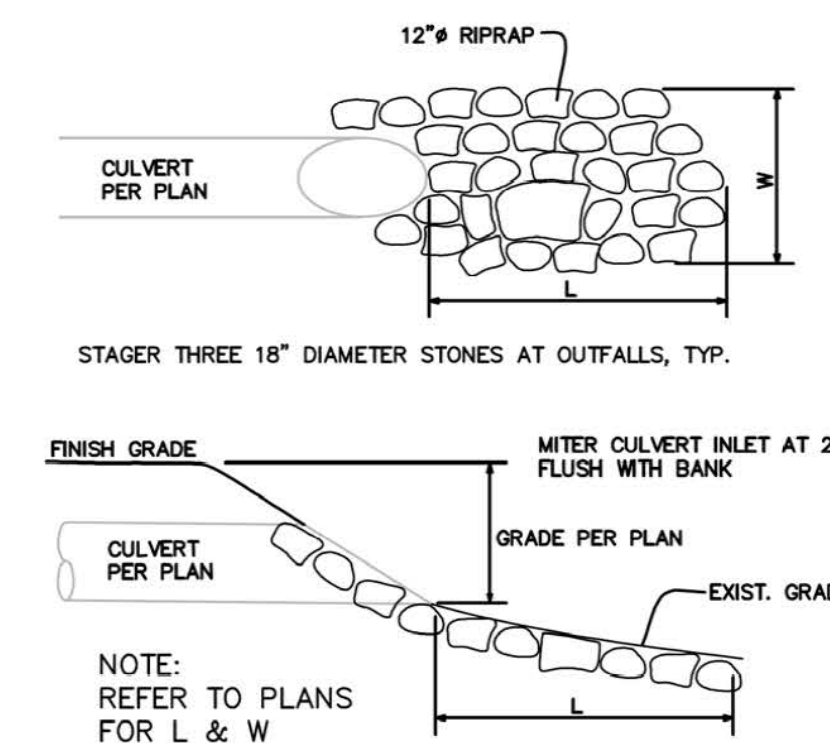
NOTES:
FOR WALL HEIGHTS IN EXCESS OF 8', USE PRECAST LAGGING AND STEEL BEAMS.



TYPICAL UTILITY TRENCH
NTS



ROADSIDE/ROCK-LINED DITCH SECTION
NTS



CULVERT OUTLET
NTS

REVISION	DESCRIPTION	BY	DATE

ATTERBURY & ASSOCIATES, INC.

Civil Engineering - Land Planning
16109 Healdsburg Avenue, Suite D, Healdsburg, CA 95448
Phone: (707) 433-0134 Fax: (707) 433-0135

APN 028-260-041



DETAILS

Henry Cornell Winery
245 Wappo Road
Santa Rosa, CA

Date: 12/06/11

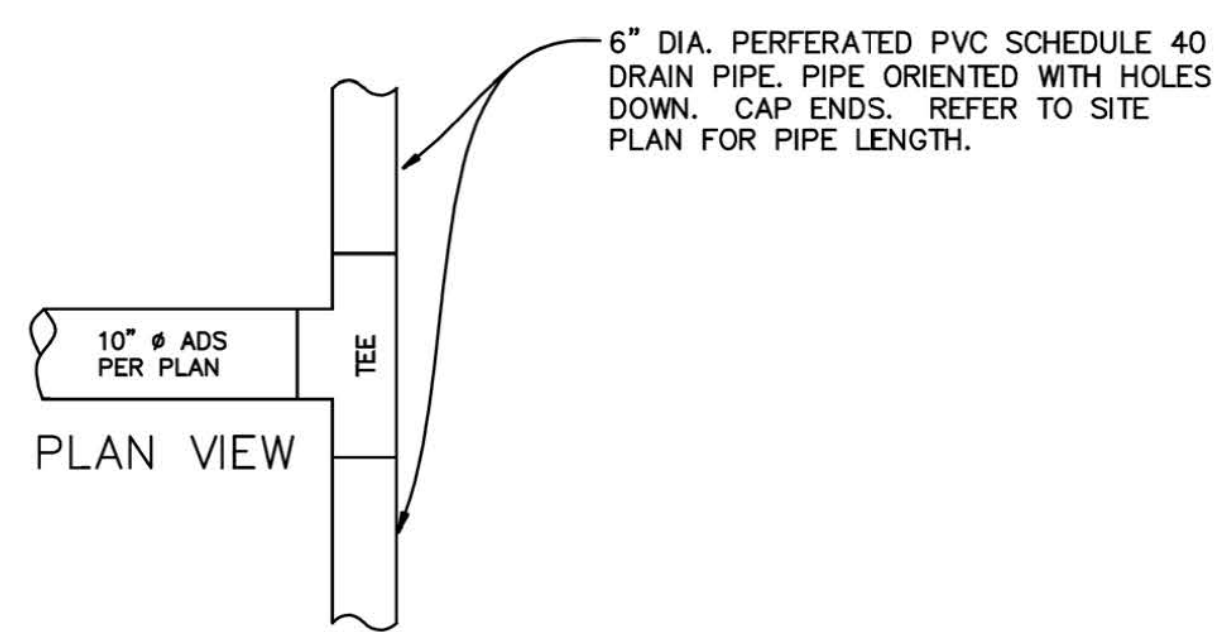
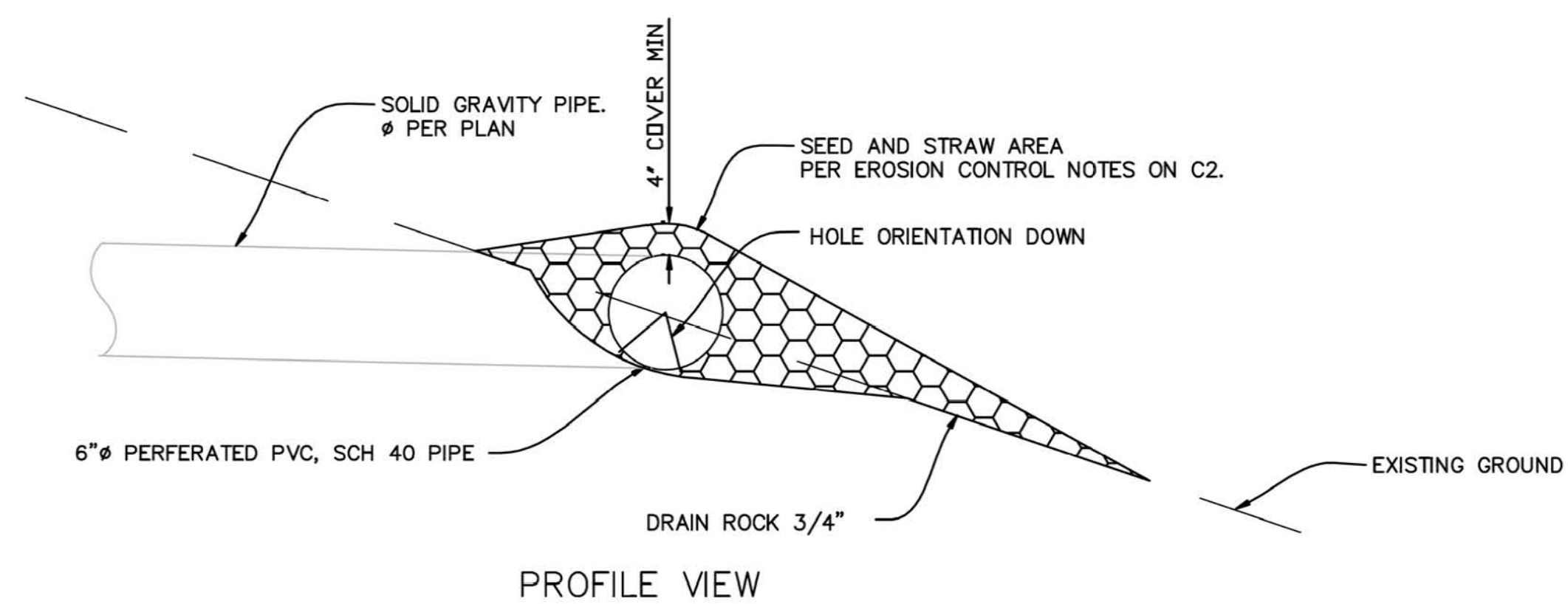
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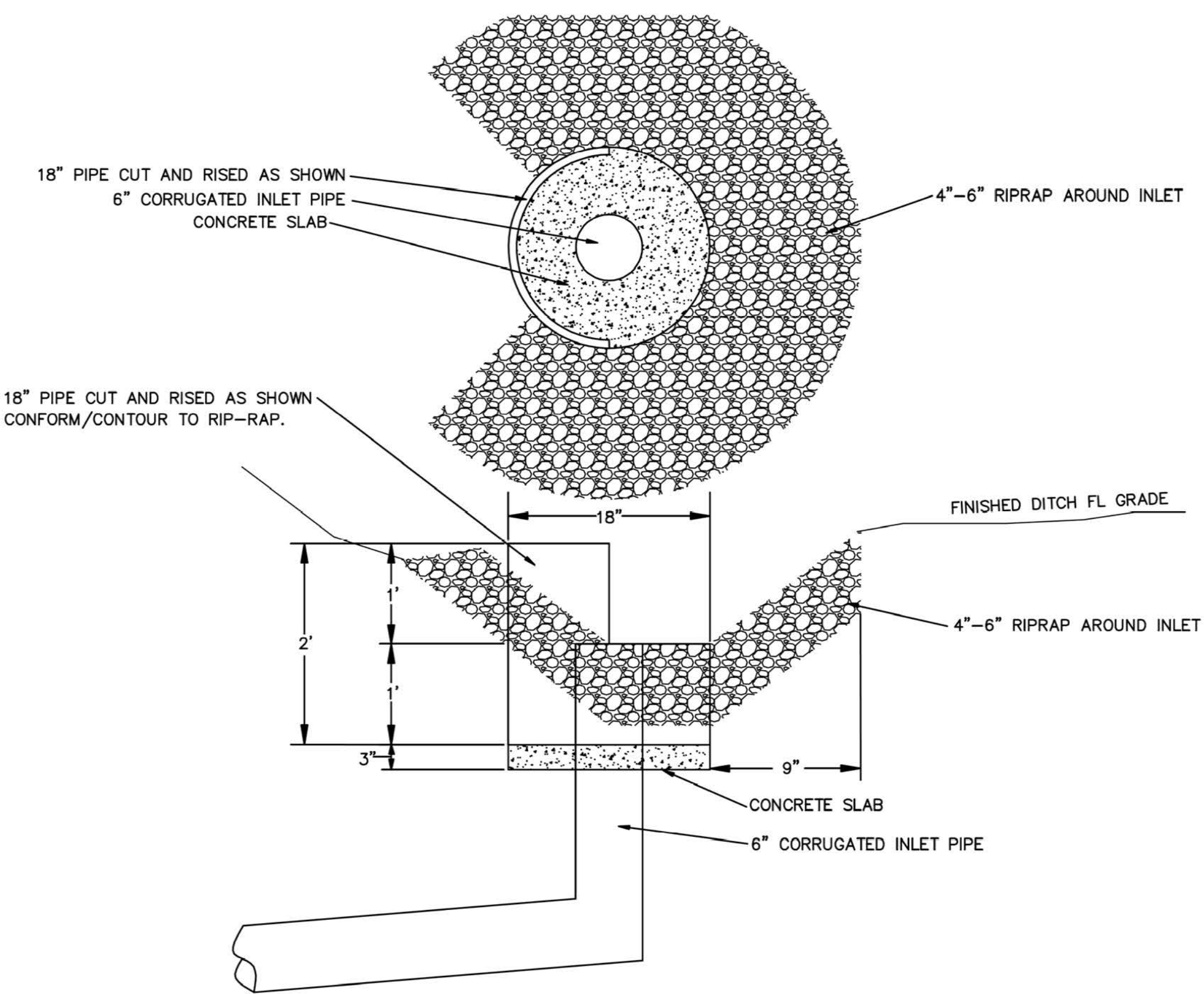
Job: 05-25

Sheet:

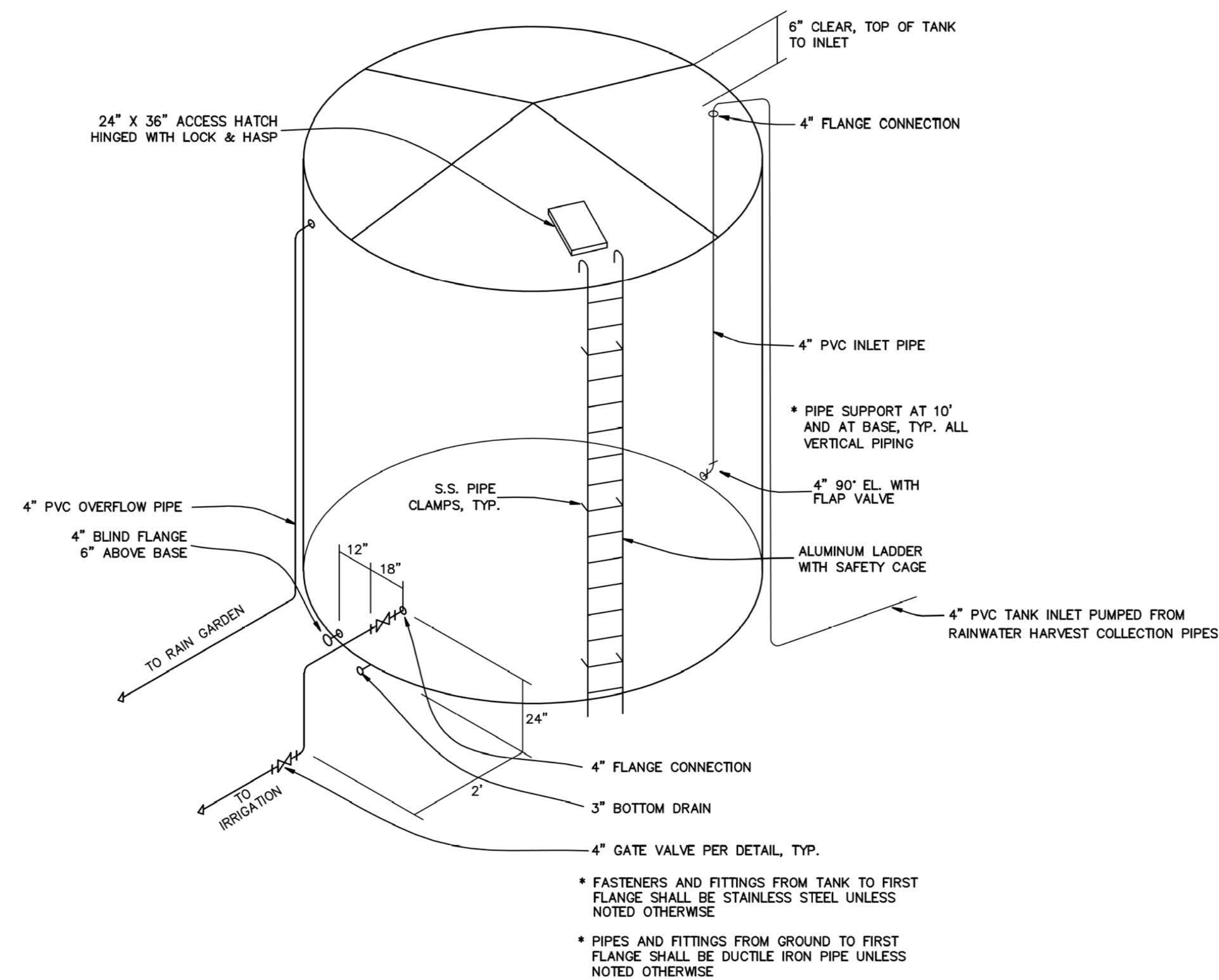
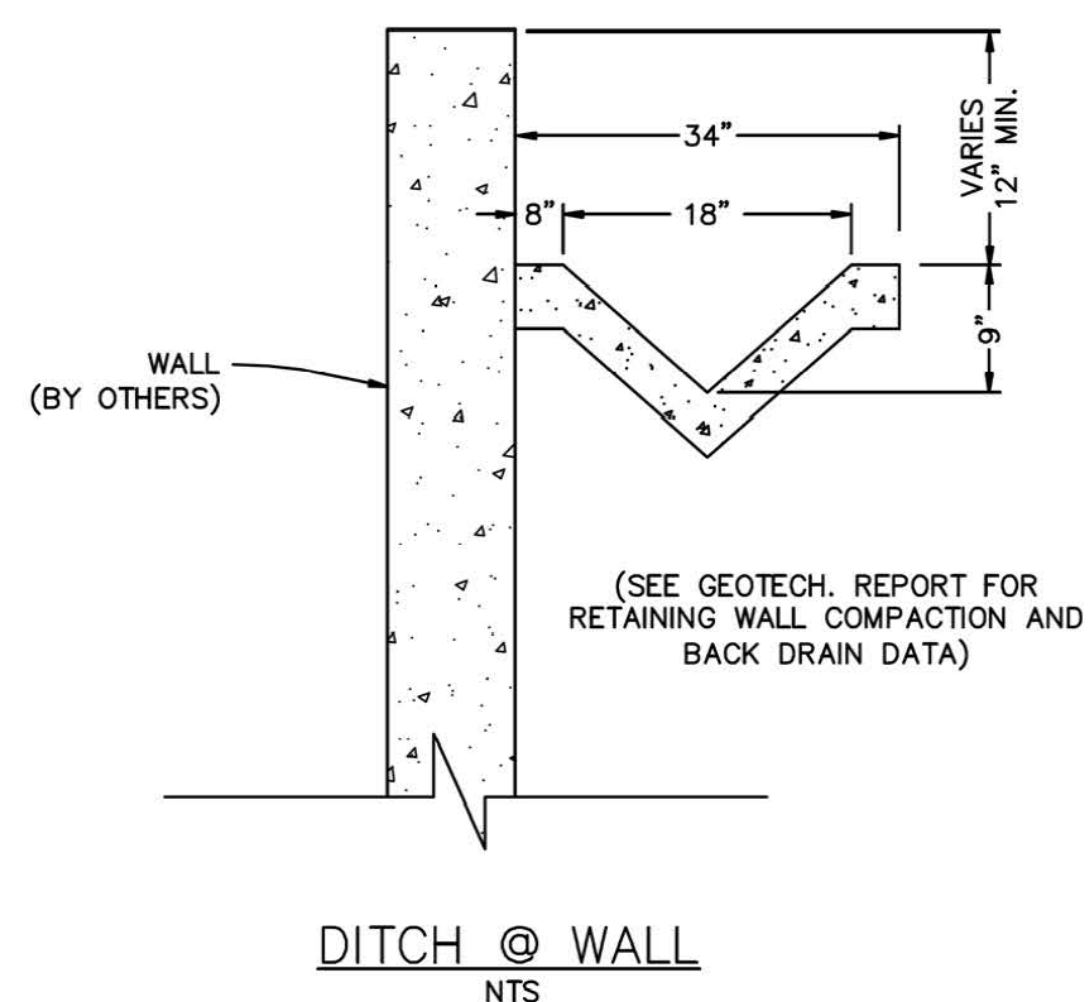
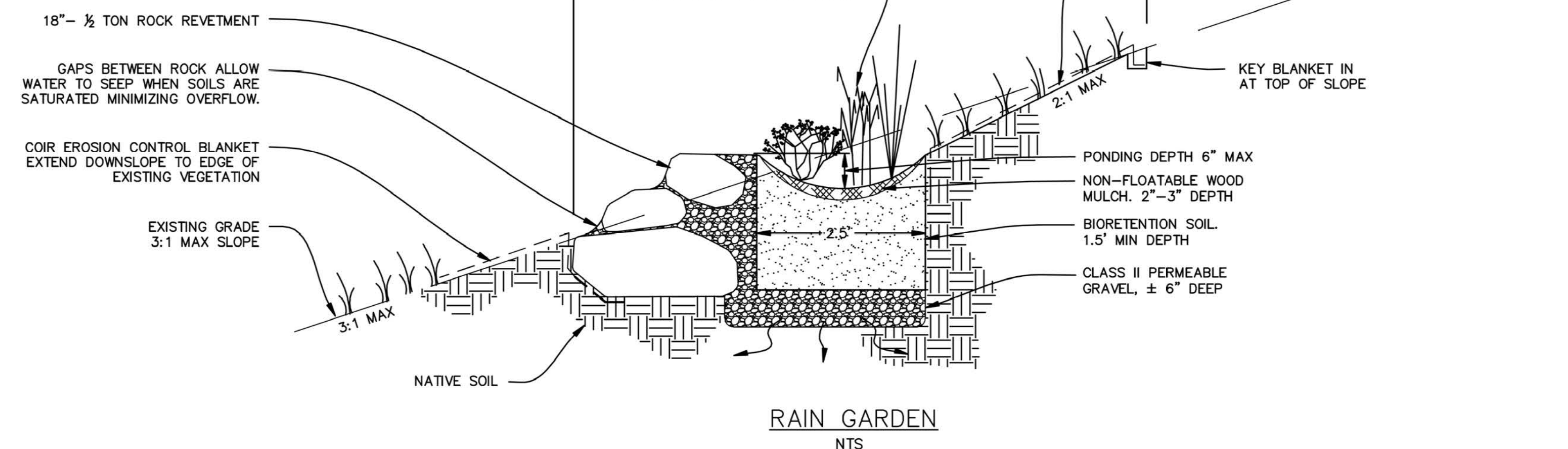
C18



VEGETATED ROCK DIFFUSER
NTS



CULVERT INLET
NTS

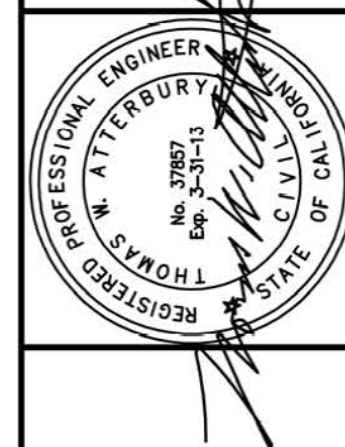


RAIN WATER STORAGE TANK SCHEMATIC
NTS

REVISION	DESCRIPTION	BY	DATE

ATTERBURY & ASSOCIATES, INC.
Civil Engineering - Land Planning
18109 Healdsburg Avenue, Suite D, Healdsburg, CA 95448
Phone: (707) 433-0134 Fax: (707) 433-0135

APN 028-260-041



DETAILS
Henry Cornell Winery
245 Wappo Road
Santa Rosa, CA

Date: 12/06/11

Scale: NA

Drawn: MRS

Job: 05-25

Sheet:

C19

APPENDIX AQ

Air Quality

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Calculation of Average Daily Emissions

Project: Cornell Winery

Year: 2013

Annual Emissions from CalEEMOd (tons/yr) =
(pounds/yr) =

Work days in 2013 = 189
assumes 9 months; 21 days per month

Average daily emissions =

ROG	Nox	PM10	PM2.5
0.57	4.74	0.23	0.23
1140	9480	460	460
6.03	50.16	2.43	2.43 (pounds/day)

Year: 2014

Annual Emissions from CalEEMOd (tons/yr) =
(pounds/yr) =

Work days in 2013 = 210
assumes 10 months; 21 days per month

Average daily emissions =

ROG	Nox	PM10	PM2.5
0.67	4.84	0.27	0.27
1340	9680	540	540
6.38	46.10	2.57	2.57 (pounds/day)

Project Name:

Cornell Winery

Date:

1-May-12

ver 2.4

Data Input

<u>Input Data</u>	<u>Data</u>	<u>Units</u>	
Wine Production			
<u>Annual</u>			
Red Wine Production	23,775	gal/yr	10,000 cases/yr
White Wine Production	0	gal/yr	- cases/yr
Red Wine Aged in Oak	50	%	
White Wine Aged in Oak	50	%	
Red Wine Aged in Oak Capacity	11,888	gallons	
White Wine Aged in Oak Capacity	0	gallons	
<u>Daily</u>			
Maximum Red Wine Fermented	7,133	gallons	
Maximum White Wine Fermented	0	gallons	
Fermentation Cycle - Red Wine	7	days	
Fermentation Cycle - White Wine	15	days	
Max Daily Red Wine Aging in Oak	9,510	gallons	
Max Daily White Wine Aging in Oak	0	gallons	
Gal/Case =	2.378		
% Red Fermenting Daily =	30%	basis: applicant	
% White Fermenting Daily =	30%	basis: applicant	
% Red Oak Aging Daily =	40%	basis: applicant	
% White Oak Aging Daily =	25%	basis: applicant	

notes:

- brown cells are calculations
- light blue cells are user data entry fields
- daily emissions are for reasonable worst case estimate
- password to unprotect sheets = apcd

Project Name: Cornell Winery
Date: 1-May-12

ver 2.4

SBCAPCD Wine Production Emission Factors

	Red	White	Units	Reference
Fermentation	6.20	2.50	lb/1000 gal	ARB, March 2005
Aging/Storage	27.83	25.83	lb/1000 gal-yr	APCD

Notes:

(a) Aging emission factor based on % loss wine per year in oak cooperage. (ETOH = ethanol)

- Aging EF = (gal wine evap/gal wine) * (lb wine evap/gal wine evap) * (lb ETOH/lb wine evap)*(1000/1000)

SG ETOH =	0.79	MSDS
Density of Water =	8.34 lb/gal	standard
Density ETOH =	6.59 lb/gal	calculated
ETOH Vol % Red =	14.00% gal/gal wine	assumption
ETOH Vol % White =	13.00% gal/gal wine	assumption
ETOH Wt % Red =	11.40% lb/lb wine	calculated
ETOH Wt % White =	10.56% lb/lb wine	calculated
Density (Red Wine) =	8.14 lb/gal	calculated
Density (Wt Wine) =	8.16 lb/gal	calculated
% Wine Loss by Vol =	3.0% gal/gal wine	APCD (loss of wine)

notes:

- brown cells are calculations

- black cells are APCD default values

Project Name: Cornell Winery
Date: 1-May-12

ver 2.4

Annual Wine Emissions (ethanol)

Process	Red usage	White usage	units	Red EF	White EF	units	Red lb/year	White lb/year
Fermentation	23,775	0	gal/yr	6.20	2.50	lb/1000 gal	147	0
Aging/Storage	11,888	0	gal/yr	27.83	25.83	lb/1000 gal	331	0
							478	0

Total = 478 lb/year
0.24 tpy

Daily Wine Emissions (ethanol)

Process	Red usage	White usage	units	Red EF	White EF	units	Red lb/day	White lb/day
Fermentation	7,133	0	gal/cycle	6.20	2.50	lb/1000 gal	6.32	0.00
Aging/Storage	9,510	0	gal/day	0.0762	0.0708	lb/1000 gal-day	0.73	0.00
							7.04	0.00

Total = 7.04 lb/day

notes:

- brown cells are calculations
- dark blue cells are data fields from other sheets

**Cornell Winery
Sonoma County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Recreational	16.9	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	3.6	Utility Company	Pacific Gas & Electric Company
Climate Zone	4	Precipitation Freq (Days)	64		

1.3 User Entered Comments

Project Characteristics -

Land Use - Acreage adjusted to match Rimpo Report

Construction Phase - Number of days for each phase adjusted to match Schedule provided by sponsor.

Off-road Equipment - LF's reduced 33% per ARB guidance.

Off-road Equipment - Equipment list provided by applicant indicates 2 loaders and 1 backhoe. Left other default equipment; Load factors reduced 33 % per ARB guidance.

Off-road Equipment - Load factors erduced 33% per ARB guidance

Off-road Equipment - Equipment list provided by applicant indicates 2 graders would be used; Load factors reduced 33 % per ARB guidance.

Off-road Equipment - Paving Equipment adjusted to reflect list provided by applicant. LF's reduced by 33% per ARB Guidance

Off-road Equipment - Added scaper from applicants equipment list and LF's reduced by 33 percent per ARB Guidance

Trips and VMT - Excavation haul truck assumed to go to Recology facility on Hay Road in Solano County
1750 round trips per transportation analysis

Demolition -

Grading - Cave Excavation and grading

Vehicle Trips - adjust trip rate to match 40 trips per day. Adjust trip type per PD.

Energy Use - Natural gas useage foe miscellaneous source from BGM

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.57	4.74	2.85	0.01	15.01	0.23	15.24	0.51	0.23	0.74						
2014	0.67	4.84	3.11	0.01	11.31	0.27	11.57	0.51	0.27	0.77						
Total	1.24	9.58	5.96	0.02	26.32	0.50	26.81	1.02	0.50	1.51						

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.57	4.74	2.85	0.01	0.93	0.23	1.16	0.51	0.23	0.74						
2014	0.67	4.84	3.11	0.01	0.92	0.27	1.19	0.51	0.27	0.77						
Total	1.24	9.58	5.96	0.02	1.85	0.50	2.35	1.02	0.50	1.51						

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Mobile	0.06	0.12	0.64	0.00	0.08	0.00	0.08	0.00	0.00	0.01						
Waste						0.00	0.00		0.00	0.00						
Water						0.00	0.00		0.00	0.00						
Total	0.06	0.12	0.64	0.00	0.08	0.00	0.08	0.00	0.00	0.01						

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Mobile	0.06	0.12	0.64	0.00	0.08	0.00	0.08	0.00	0.00	0.01						
Waste						0.00	0.00		0.00	0.00						
Water						0.00	0.00		0.00	0.00						
Total	0.06	0.12	0.64	0.00	0.08	0.00	0.08	0.00	0.00	0.01						

AQ-11

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						
Off-Road	0.06	0.52	0.27	0.00		0.02	0.02		0.02	0.02						
Total	0.06	0.52	0.27	0.00	0.00	0.02	0.02	0.00	0.02	0.02						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.2 Site Preparation - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						
Off-Road	0.06	0.52	0.27	0.00		0.02	0.02		0.02	0.02						
Total	0.06	0.52	0.27	0.00	0.00	0.02	0.02	0.00	0.02	0.02						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

AQ-13

3.3 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						
Off-Road	0.04	0.30	0.18	0.00		0.02	0.02		0.02	0.02						
Total	0.04	0.30	0.18	0.00	0.00	0.02	0.02	0.00	0.02	0.02						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.3 Demolition - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						
Off-Road	0.04	0.30	0.18	0.00		0.02	0.02		0.02	0.02						
Total	0.04	0.30	0.18	0.00	0.00	0.02	0.02	0.00	0.02	0.02						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

AQ-15

3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.92	0.00	0.92	0.50	0.00	0.50						
Off-Road	0.35	2.72	1.65	0.00		0.14	0.14		0.14	0.14						
Total	0.35	2.72	1.65	0.00	0.92	0.14	1.06	0.50	0.14	0.64						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.10	1.19	0.59	0.00	14.07	0.04	14.11	0.01	0.04	0.05						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.01	0.01	0.11	0.00	0.01	0.00	0.01	0.00	0.00	0.00						
Total	0.11	1.20	0.70	0.00	14.08	0.04	14.12	0.01	0.04	0.05						

3.4 Grading - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.92	0.00	0.92	0.50	0.00	0.50						
Off-Road	0.35	2.72	1.65	0.00		0.14	0.14		0.14	0.14						
Total	0.35	2.72	1.65	0.00	0.92	0.14	1.06	0.50	0.14	0.64						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.10	1.19	0.59	0.00	0.01	0.04	0.05	0.01	0.04	0.05						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.01	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.11	1.20	0.70	0.00	0.01	0.04	0.05	0.01	0.04	0.05						

3.4 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.92	0.00	0.92	0.50	0.00	0.50						
Off-Road	0.24	1.88	1.18	0.00		0.10	0.10		0.10	0.10						
Total	0.24	1.88	1.18	0.00	0.92	0.10	1.02	0.50	0.10	0.60						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.07	0.78	0.40	0.00	10.37	0.03	10.40	0.01	0.03	0.03						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.01	0.01	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00						
Total	0.08	0.79	0.47	0.00	10.38	0.03	10.41	0.01	0.03	0.03						

3.4 Grading - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.92	0.00	0.92	0.50	0.00	0.50						
Off-Road	0.24	1.88	1.18	0.00		0.10	0.10		0.10	0.10						
Total	0.24	1.88	1.18	0.00	0.92	0.10	1.02	0.50	0.10	0.60						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.07	0.78	0.40	0.00	0.01	0.03	0.03	0.01	0.03	0.03						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.01	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.08	0.79	0.47	0.00	0.01	0.03	0.03	0.01	0.03	0.03						

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.28	1.73	1.13	0.00		0.10	0.10		0.10	0.10						
Total	0.28	1.73	1.13	0.00		0.10	0.10		0.10	0.10						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.5 Building Construction - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.28	1.73	1.13	0.00		0.10	0.10		0.10	0.10						
Total	0.28	1.73	1.13	0.00		0.10	0.10		0.10	0.10						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

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3.6 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.40	0.27	0.00		0.03	0.03		0.03	0.03						
Paving	0.00					0.00	0.00		0.00	0.00						
Total	0.06	0.40	0.27	0.00		0.03	0.03		0.03	0.03						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.6 Paving - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.40	0.27	0.00		0.03	0.03		0.03	0.03						
Paving	0.00					0.00	0.00		0.00	0.00						
Total	0.06	0.40	0.27	0.00		0.03	0.03		0.03	0.03						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.7 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.00					0.00	0.00		0.00	0.00						
Off-Road	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00						
Total	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.7 Architectural Coating - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.00					0.00	0.00		0.00	0.00						
Off-Road	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00						
Total	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.06	0.12	0.64	0.00	0.08	0.00	0.08	0.00	0.00	0.01						
Unmitigated	0.06	0.12	0.64	0.00	0.08	0.00	0.08	0.00	0.00	0.01						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	40.05	40.05	40.05	167,079	167,079
Total	40.05	40.05	40.05	167,079	167,079

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Recreational	14.70	6.60	6.60	60.00	30.00	10.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00						
Electricity Unmitigated						0.00	0.00		0.00	0.00						
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
User Defined Recreational	501.085	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						

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5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
User Defined Recreational	501.085	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
User Defined Recreational	0								
Total									

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
User Defined Recreational	0								
Total									

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						
Consumer Products	0.00					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						
Consumer Products	0.00					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated								
Unmitigated								
Total	NA	NA	NA	NA	NA	NA	NA	NA

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
User Defined Recreational	0 / 0								
Total									

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
User Defined Recreational	0 / 0								
Total									

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated								
Unmitigated								
Total	NA	NA	NA	NA	NA	NA	NA	NA

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
User Defined Recreational	0								
Total									

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
User Defined Recreational	0								
Total									

9.0 Vegetation

**Cornell Winery
Sonoma County, Winter**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Recreational	16.9	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	3.6	Utility Company	Pacific Gas & Electric Company
Climate Zone	4	Precipitation Freq (Days)	64		

1.3 User Entered Comments

Project Characteristics -

Land Use - Acreage adjusted to match Rimpo Report

Construction Phase - Number of days for each phase adjusted to match Schedule provided by sponsor.

Off-road Equipment - LF's reduced 33% per ARB guidance.

Off-road Equipment - Equipment list provided by applicant indicates 2 loaders and 1 backhoe. Left other default equipment; Load factors reduced 33 % per ARB guidance.

Off-road Equipment - Load factors erduced 33% per ARB guidance

Off-road Equipment - Equipment list provided by applicant indicates 2 graders would be used; Load factors reduced 33 % per ARB guidance.

Off-road Equipment - Paving Equipment adjusted to reflect list provided by applicant. LF's reduced by 33% per ARB Guidance

Off-road Equipment - Added scaper from applicants equipment list and LF's reduced by 33 percent per ARB Guidance

Trips and VMT - Excavation haul truck assumed to go to Recology facility on Hay Road in Solano County
1750 round trips per transportation analysis

Demolition -

Grading - Cave Excavation and grading

Vehicle Trips - adjust trip rate to match 40 trips per day. Adjust trip type per PD.

Energy Use - Natural gas useage foe miscellaneous source from BGM

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	11.74	94.58	57.34	0.11	210.59	4.79	215.38	3.41	4.79	8.20						
2014	9.16	67.75	43.01	0.09	209.91	3.50	213.41	3.40	3.50	6.90						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	11.74	94.58	57.34	0.11	6.30	4.79	11.09	3.41	4.79	8.20						
2014	9.16	67.75	43.01	0.09	6.13	3.50	9.63	3.40	3.50	6.90						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Mobile	0.38	0.67	3.54	0.00	0.55	0.02	0.58	0.02	0.02	0.04						
Total	0.38	0.67	3.54	0.00	0.55	0.02	0.58	0.02	0.02	0.04						

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Mobile	0.38	0.67	3.54	0.00	0.55	0.02	0.58	0.02	0.02	0.04						
Total	0.38	0.67	3.54	0.00	0.55	0.02	0.58	0.02	0.02	0.04						

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.07	0.00	0.07	0.00	0.00	0.00						
Off-Road	2.81	23.21	12.05	0.02		1.10	1.10		1.10	1.10						
Total	2.81	23.21	12.05	0.02	0.07	1.10	1.17	0.00	1.10	1.10						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.08	0.08	0.78	0.00	0.12	0.00	0.12	0.00	0.00	0.01						
Total	0.08	0.08	0.78	0.00	0.12	0.00	0.12	0.00	0.00	0.01						

3.2 Site Preparation - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.07	0.00	0.07	0.00	0.00	0.00						
Off-Road	2.81	23.21	12.05	0.02		1.10	1.10		1.10	1.10						
Total	2.81	23.21	12.05	0.02	0.07	1.10	1.17	0.00	1.10	1.10						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.08	0.08	0.78	0.00	0.00	0.00	0.01	0.00	0.00	0.01						
Total	0.08	0.08	0.78	0.00	0.00	0.00	0.01	0.00	0.00	0.01						

3.3 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.09	0.00	0.09	0.00	0.00	0.00						
Off-Road	3.42	25.97	15.98	0.03		1.54	1.54		1.54	1.54						
Total	3.42	25.97	15.98	0.03	0.09	1.54	1.63	0.00	1.54	1.54						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.02	0.20	0.12	0.00	0.21	0.01	0.22	0.00	0.01	0.01						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.13	0.13	1.27	0.00	0.19	0.01	0.20	0.01	0.01	0.01						
Total	0.15	0.33	1.39	0.00	0.40	0.02	0.42	0.01	0.02	0.02						

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3.3 Demolition - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.09	0.00	0.09	0.00	0.00	0.00						
Off-Road	3.42	25.97	15.98	0.03		1.54	1.54		1.54	1.54						
Total	3.42	25.97	15.98	0.03	0.09	1.54	1.63	0.00	1.54	1.54						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.02	0.20	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.13	0.13	1.27	0.00	0.01	0.01	0.01	0.01	0.01	0.01						
Total	0.15	0.33	1.39	0.00	0.01	0.02	0.02	0.01	0.02	0.02						

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3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.04	0.00	6.04	3.31	0.00	3.31						
Off-Road	3.96	31.09	18.90	0.03		1.65	1.65		1.65	1.65						
Total	3.96	31.09	18.90	0.03	6.04	1.65	7.69	3.31	1.65	4.96						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.18	13.76	6.97	0.02	203.67	0.47	204.14	0.08	0.47	0.55						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.13	0.13	1.27	0.00	0.19	0.01	0.20	0.01	0.01	0.01						
Total	1.31	13.89	8.24	0.02	203.86	0.48	204.34	0.09	0.48	0.56						

3.4 Grading - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.04	0.00	6.04	3.31	0.00	3.31						
Off-Road	3.96	31.09	18.90	0.03		1.65	1.65		1.65	1.65						
Total	3.96	31.09	18.90	0.03	6.04	1.65	7.69	3.31	1.65	4.96						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.18	13.76	6.97	0.02	0.08	0.47	0.55	0.08	0.47	0.55						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.13	0.13	1.27	0.00	0.01	0.01	0.01	0.01	0.01	0.01						
Total	1.31	13.89	8.24	0.02	0.09	0.48	0.56	0.09	0.48	0.56						

3.4 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.04	0.00	6.04	3.31	0.00	3.31						
Off-Road	3.74	29.13	18.36	0.03		1.51	1.51		1.51	1.51						
Total	3.74	29.13	18.36	0.03	6.04	1.51	7.55	3.31	1.51	4.82						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.08	12.30	6.35	0.02	203.67	0.42	204.09	0.08	0.42	0.50						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.12	0.12	1.14	0.00	0.19	0.01	0.20	0.01	0.01	0.01						
Total	1.20	12.42	7.49	0.02	203.86	0.43	204.29	0.09	0.43	0.51						

3.4 Grading - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.04	0.00	6.04	3.31	0.00	3.31						
Off-Road	3.74	29.13	18.36	0.03		1.51	1.51		1.51	1.51						
Total	3.74	29.13	18.36	0.03	6.04	1.51	7.55	3.31	1.51	4.82						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.08	12.30	6.35	0.02	0.08	0.42	0.50	0.08	0.42	0.50						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.12	0.12	1.14	0.00	0.01	0.01	0.01	0.01	0.01	0.01						
Total	1.20	12.42	7.49	0.02	0.09	0.43	0.51	0.09	0.43	0.51						

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.22	26.20	17.16	0.03		1.57	1.57		1.57	1.57						
Total	4.22	26.20	17.16	0.03		1.57	1.57		1.57	1.57						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.5 Building Construction - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.22	26.20	17.16	0.03		1.57	1.57		1.57	1.57						
Total	4.22	26.20	17.16	0.03		1.57	1.57		1.57	1.57						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

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3.6 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.85	17.72	11.82	0.02		1.49	1.49		1.49	1.49						
Paving	0.00					0.00	0.00		0.00	0.00						
Total	2.85	17.72	11.82	0.02		1.49	1.49		1.49	1.49						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.14	0.14	1.32	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	0.14	0.14	1.32	0.00	0.22	0.01	0.23	0.01	0.01	0.02						

3.6 Paving - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.85	17.72	11.82	0.02		1.49	1.49		1.49	1.49						
Paving	0.00					0.00	0.00		0.00	0.00						
Total	2.85	17.72	11.82	0.02		1.49	1.49		1.49	1.49						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.14	0.14	1.32	0.00	0.01	0.01	0.02	0.01	0.01	0.02						
Total	0.14	0.14	1.32	0.00	0.01	0.01	0.02	0.01	0.01	0.02						

3.7 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.01					0.00	0.00		0.00	0.00						
Off-Road	0.30	1.85	1.28	0.00		0.16	0.16		0.16	0.16						
Total	0.31	1.85	1.28	0.00		0.16	0.16		0.16	0.16						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

3.7 Architectural Coating - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.01					0.00	0.00		0.00	0.00						
Off-Road	0.30	1.85	1.28	0.00		0.16	0.16		0.16	0.16						
Total	0.31	1.85	1.28	0.00		0.16	0.16		0.16	0.16						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.38	0.67	3.54	0.00	0.55	0.02	0.58	0.02	0.02	0.04						
Unmitigated	0.38	0.67	3.54	0.00	0.55	0.02	0.58	0.02	0.02	0.04						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	40.05	40.05	40.05	167,079	167,079
Total	40.05	40.05	40.05	167,079	167,079

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Recreational	14.70	6.60	6.60	60.00	30.00	10.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Recreational	1.37284	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU	lb/day										lb/day						
User Defined Recreational	0.00137284	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00							
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00							

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00							
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00							
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						
Consumer Products	0.00					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						
Consumer Products	0.00					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Emergency Generator Emissions **Generac QT 130**

Number of units = 1
Hours of Operation = 1 hr/day
Size of Generator = 208.3 HP

Emission factors (from SCAQMD Certified ICE Spreadsheet) http://www.aqmd.gov/permit/fact_sheet_emergency_backup_gen.htm

	Nox	CO	PM	HC
	0.16	1.76	0.00 gm/bhp-hr	0.062
Emission =	33.328 gm/day	366.608	0 gm/day	12.9146
	0.033328 kg/day	0.366608	0 kg/day	0.012915
	0.07 lbs/day	0.81	0.00 lbs/day	0.03

GHG emissions:

per CCAR Protocol, stationary combustion factors for natural gas are:

http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

	CO2	CH4	N2O	
	0.157736	2.75E-05	2.75E-06 kg/cf	0.157736
	5.74	0.001	0.0001 kg/gal	1 gallon = 36.39 cf
				http://www.generatorjoe.net/html/energy.html

Assumptions:

1 Number of units
52 hr/yr
520 cf/hr per spec sheet at 75% load

Annual fuel use	27040 cf/yr		
Annual Emission =	CO2	CH4	N2O
	4265.172	0.743061281	0.074306128 kg/yr
GWP =	4.265172	0.000743061	7.43061E-05 MT/yr
		21	310
AS eCO2 =	4.265172	0.015604287	0.0230349
Total eCO2 =	4.303811	MT/yr	

APPENDIX GHG

Greenhouse Gas Emissions

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Soil Organic Carbon GHG Emissions Calculations

Henry Cornell Winery Project

Prepared 5-30-12

Dan Sicular, ESA

Factor	value	unit	source
<u>Loss of soil carbon</u>			
Elemental carbon per hectare - california rangeland	140	Metric Tonnes	Silver et al, 2010
Elemental carbon per acre	57	Metric Tonnes	Calculated
CO2 equivalent	208	Metric Tonnes	Calculated
Total acres disturbed	3	acres	Atterbury
Assumed carbon emitted to atmosphere	50%	percent	Assumed
Total CO2 emissions	312	Metric Tonnes	Calculated
Time period over which disturbance occurs	1	years	Project Description
Annual emissions	312	Metric Tonnes	Calculated
<u>Short-term Loss of carbon sequestration (areas to be revegetated)</u>			
Elemental carbon sequestration rate per hectare in rangeland (annual)	0.35	Metric Tonnes	Source quoted in Silver et al, 2010
Sequestration rate per acre	0.14	Metric Tonnes	Calculated
CO2 equivalent	0.52	Metric Tonnes	Calculated
Total acres disturbed that will be revegetated	2	acres	Atterbury
Total annual unrealized sequestration of CO2	1.0	Metric Tonnes	Calculated
Length of time until new vegetation is established	4.5	years	Estimated
Total project unrealized sequestration of CO2 from areas to be revegetated	5	Metric Tonnes	Calculated
<u>Permanent loss of carbon sequestration (areas not to be revegetated)</u>			
Elemental carbon sequestration rate per hectare in rangeland (annual)	0.35	Metric Tonnes	Source quoted in Silver et al, 2010
Sequestration rate per acre	0.14	Metric Tonnes	Calculated
CO2 equivalent	0.52	Metric Tonnes	Calculated
Total acres permanently de-vegetated	1	acres	Atterbury
Total annual unrealized sequestration of CO2	0.52	Metric Tonnes	Calculated
Over 100 year time span	52	Metric Tonnes	Calculated
Project Total: Soil Carbon Loss	369	Metric Tons	
Conversion Factors			
1 hectare =	2.47	acres	
1 metric tonne elemental carbon =	3.67	metric tonnes CO2	

APPENDIX BIO

Biological Resources

**TABLE BIO-1
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE**

Common Name Scientific Name	Status	Phenology^a	Flowering Period	Habitat	Potential to Occur
Franciscan onion <i>Allium peninsulare</i> var. <i>franciscanum</i>	CNPS 1B.2	Perennial herb (bulbiferous)	May – Jun	Cismontane woodland and valley and foothill grassland associated with clay soil; often on serpentine. Elevation 170 to 980 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Sonoma alopecurus <i>Alopecurus aequalis</i> var. <i>sonomensis</i>	FE CNPS 1B.1	Perennial herb	May – Jul	Freshwater marshes and swamps and riparian scrub. Elevation 15 to 1,200 feet.	Low Potential. Suitable habitat present on the Project site, but not within the limits of the proposed winery development site. Species not found during plant surveys.
Napa false indigo <i>Amorpha californica</i> var. <i>napensis</i>	CNPS 1B.2	Shrub (deciduous)	Apr – Jul	Chaparral, cismontane woodland, and openings in broadleaved upland forest. Elevation 390 to 6,560 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Slender silver moss <i>Anomobryum julaceum</i>	CNPS 2.2	Moss		Damp rocks and soils on outcrops, usually on roadcuts within broadleaved upland forest, lower montane coniferous forest and North Coast coniferous forest. Elevations 330 to 3,280 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Rincon Ridge Manzanita <i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	CNPS 1B.1	Shrub (evergreen)	Feb – Apr	Cismontane woodland and chaparral on soils of rhyolitic origin. Elevation 245 to 1,215 feet.	Low Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Clara Hunt's milk-vetch <i>Astragalus claranus</i>	CNPS 1B.1	Annual herb	Mar – May	Cismontane woodland, valley and foothill grassland, and openings in chaparral; often on serpentine or volcanic, rocky, clay soil. Elevation 250 to 900 feet.	Low Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Sonoma sunshine <i>Blennosperma bakeri</i>	FE CE CNPS 1B.1	Annual herb	Mar - May	Mesic valley and foothill grassland and vernal pools. Elevation 30 to 360 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Narrow-anthered California brodiaea <i>Brodiaea californica</i> var. <i>leptandra</i>	CNPS 1B.2	Perennial herb (bulbiferous)	May – Jul	Broadleaved upland forest, chaparral, cismontane coniferous forest, and valley and foothill grassland on volcanic soil. Elevation 360 to 3,000 feet.	Present. Suitable habitat present on the Project site and species found during plant surveys on the proposed winery development site.
Rincon Ridge ceanothus <i>Ceanothus confusus</i>	CNPS 1B.1	Shrub (evergreen)	Feb – Jun	Closed-cone coniferous forest, chaparral, and cismontane woodland on volcanic or serpentine soil. Elevation 250 to 3,490 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Calistoga ceanothus <i>Ceanothus divergens</i>	CNPS 1B.2	Shrub (evergreen)	Feb – Apr	Chaparral on serpentine or volcanic, rocky soil. Elevation 560 to 3,120 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Holly-leaved ceanothus <i>Ceanothus purpureus</i>	CNPS 1B.2	Shrub (evergreen)	Feb – Jun	Chaparral and cismontane woodland on rocky, volcanic soil. Elevation 390 to 2,100 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.

TABLE BIO-1 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Phenology ^a	Flowering Period	Habitat	Potential to Occur
Sonoma ceanothus <i>Ceanothus sonomensis</i>	CNPS 1B.2	Shrub (evergreen)	Feb – Apr	Chaparral on sandy, serpentine, or volcanic soil. Elevation 700 to 2,620 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Pappose tarplant <i>Centromadia parryi</i> ssp. <i>parryi</i>	CNPS 1B.2	Annual herb	May – Nov	Chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernal mesic valley and foothill grassland; often on alkaline. Elevation 7 to 1,380 feet.	Moderate Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Dwarf downingia <i>Downingia pusilla</i>	CNPS 2.2	Annual herb	Mar – May	Vernal pools and mesic valley and foothill grassland. Elevation 3 to 1,560 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Loch Lomond button-celery <i>Eryngium constancei</i>	FE CE CNPS 1B.1	Annual/ Perennial herb	Apr – Jun	Vernal pools. Elevation 1,500 to 3,800 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Tuolumne button-celery <i>Eryngium pinnatisectum</i>	CNPS 1B.1	Annual/ Perennial herb	May – Aug	Vernal pools. Elevation 230 to 3,000 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Fragrant fritillary <i>Fritillaria liliacea</i>	CNPS 1B.2	Perennial herb (bulbiferous)	Feb – Apr	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland; often on serpentine soil. Elevation 10 to 1,345 feet.	Moderate Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Burke's goldfields <i>Lasthenia burkei</i>	FE CE CNPS 1B.1	Annual herb	Apr – Jun	Vernal pools and mesic meadows and seeps. Elevation 50 to 1,970 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Contra Costa goldfields <i>Lasthenia conjugens</i>	FE CNPS 1B.1	Annual herb	Mar – Jun	Vernal pools and mesic cismontane woodland, valley and foothill grassland and alkaline playas. Elevation 0 to 1,540 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Colusa layia <i>Layia septentrionalis</i>	CNPS 1B.2	Annual herb	Apr – May	Chaparral, cismontane woodland, and valley and foothill grassland on sandy, serpentine soil. Elevation 330 to 3,590 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Jepson's leptosiphon <i>Leptosiphon jepsonii</i>	CNPS 1B.2	Annual herb	Mar – May	Chaparral and cismontane woodland. Usually on volcanic soil. Elevation 330 to 1,640 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Sebastopol meadowfoam <i>Limnanthes vincularis</i>	FE CE CNPS 1B.1	Annual herb	Apr – May	Vernal mesic valley and foothill grassland and meadows and seeps and vernal pools. Elevation 50 to 1,000 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Cobb Mountain lupine <i>Lupinus sericatus</i>	CNPS 1B.2	Perennial herb	Mar – Jun	Broadleaved upland forest, chaparral, cismontane woodland, and lower montane coniferous forest. Elevation 900 to 5,000 feet.	High Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.

TABLE BIO-1 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Phenology^a	Flowering Period	Habitat	Potential to Occur
Marsh microseris <i>Microseris paludosa</i>	CNPS 1B.2	Perennial herb	Apr – Jun	Closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland. Elevation 20 to 1,800 feet.	Moderate Potential. Suitable habitat present on the Project site, including the proposed winery development site, but species not found during plant surveys.
Baker's navarretia <i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	CNPS 1B.1	Annual herb	Apr – Jul	Vernal pools and meadows and seeps and mesic cismontane woodland, lower coniferous forest, and valley and foothill grassland. Elevation 15 to 5,700 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Many-flowered navarretia <i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	FE CE CNPS 1B.2	Annual herb	May – Jun	Vernal pools. Elevation 100 to 3,120 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Sonoma beardtongue <i>Penstemon newberryi</i> var. <i>sonomensis</i>	CNPS 1B.3	Perennial herb	Apr – Aug	Rock chaparral. Elevation 2,300 to 4,500 feet.	High Potential. Suitable habitat present on the Project site, but not within the limits of the proposed winery development site. Species not found during plant surveys.
Calistoga popcorn-flower <i>Plagiobothrys strictus</i>	FE CT CNPS 1B.1	Annual herb	Mar – Jun	Vernal pools, meadows and seeps, and valley and foothill grassland associated with alkaline areas near thermal springs. Elevation 300 to 520 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Napa blue grass <i>Poa napensis</i>	FE CE CNPS 1B.1	Perennial herb	May – Aug	Meadows and seeps and valley and foothill grasslands associated with alkaline areas near thermal springs. Elevation 330 to 560 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Napa checkerbloom <i>Sidalcea hickmanii</i> ssp. <i>napensis</i>	CNPS 1B.1	Perennial herb	Apr – Jun	Chaparral on soils of rhyolitic origin. Elevation 1,360 to 2,000 feet.	Low Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.
Marsh checkerbloom <i>Sidalcea oregana</i> ssp. <i>hydrophila</i>	CNPS 1B.1	Perennial herb	Jul - Aug	Mesic riparian forest and meadows and seeps. Elevation 3,610 to 7,550 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Kenwood Marsh checkerbloom <i>Sidalcea oregana</i> ssp. <i>valida</i>	FE CE CNPS 1B.1	Perennial herb (rhizomatous)	Jun – Sept	Freshwater marshes and swamps. Elevation 380 to 490 feet.	Low Potential. Suitable habitat present on the Project site, but not within the limits of the proposed winery development site. Species not found during plant surveys.
Two-fork clover <i>Trifolium amoenum</i>	FE CNPS 1B.1	Annual herb	Apr – Jun	Coastal bluff scrub and valley and foothill grassland. Sometimes on serpentine soil. Elevation 20 to 1,360 feet.	Low Potential. Suitable habitat present on the Project site, but not within the limits of the proposed winery development site. Species not found during plant surveys.

TABLE BIO-1 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Phenology^a	Flowering Period	Habitat	Potential to Occur
Saline clover <i>Trifolium hydrophilum</i>	CNPS 1B.2	Annual herb	Apr – Jun	Vernal pools, marshes and swamps, and mesic alkaline valley and foothill grassland. Elevation 0 to 980 feet.	No Potential. Suitable habitat not present on the Project site. Species not found during plant surveys.
Oval-leaved viburnum <i>Viburnum ellipticum</i>	CNPS 2.3	Shrub (deciduous)	May – Jun	Chaparral, cismontane woodland, and lower montane coniferous forest. Elevation 700 to 4,590 feet.	Moderate Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during plant surveys.

NOTE:

^a Phenology is the study of periodic occurrences in nature, such as the ripening of fruit, and their relation to climate.

CODES:

FE: Federally listed as Endangered
 FT: Federally listed as Threatened
 CE: State of California listed as Endangered
 CT: State of California listed as Threatened
 CR: State of California listed as Rare

CNPS = California Native Plant Society
 1A: Presumed extinct in California
 1B: Rare, Threatened, or Endangered in California and elsewhere
 2: Rare, Threatened, or Endangered in California, but more common elsewhere

POTENTIAL TO OCCUR

No Potential – Those species for which there is no suitable habitat present on the Project site (i.e., habitats on the Project site are unsuitable for the species requirements [e.g., foraging, breeding, cover, substrate, elevation, hydrology, vegetation community, disturbance regime, etc.]). The species has no or an extremely low probability of being found on the Project site.
 Low Potential – Those species for which limited suitable habitat is present on the Project site (i.e., habitats on the Project site are mostly unsuitable or of very low quality). Additionally, there may be no or few known records of occurrence in the vicinity of the Project site. The species has a low probability of being found on the Project site.
 Moderate Potential – Those species for which suitable habitat is present on the Project site (i.e., habitats on the Project site are mostly suitable or of marginal quality). Additionally, there may be no, few, or many known records of occurrence in the vicinity of the Project site. The species has a moderate probability of being found on the Project site.
 High Potential – Those species for which highly suitable habitat is present on the Project site (i.e., habitats on the Project site are mostly of high quality). Additionally, there may be few or many known records of occurrence in the vicinity of the Project site. The species has a high probability of being found on the Project site.
 Present – Those species for which were found on the Project site (i.e., the species was either found during Project site surveys or a known occurrence is recorded on the Project site).

SOURCES: Prunuske Chatham, Inc., 2010; Ted Winfield & Associates et al., 2011; Ted Winfield & Associates, 2012; USFWS, 2012a; CDFG, 2012; CNPS, 2012

**TABLE BIO-2
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE**

Common Name Scientific Name	Status	Habitat	Potential to Occur
Invertebrates			
Blennosperma vernal pool andrenid bee <i>Andrena blennospermatis</i>	SA	Oligolectic on vernal pool flowers, especially Sonoma sunshine.	No Potential. Suitable habitat not present on the Project site.
Ricksecker's water scavenger beetle <i>Hydrochara rickseckeri</i>	SA	Pond habitats.	Low Potential. Suitable habitat present on the Project site, but not within the limits of the proposed winery development site.
Leech's skyline diving beetle <i>Hydroporus leechi</i>	SA	Shores of ponds.	Low Potential. Suitable habitat present on the Project site, but not within the limits of the proposed winery development site.
California linderiella <i>Linderiella occidentalis</i>	SA	Ephemeral pools commonly found in grass bottomed swales of unplowed grasslands in old alluvial soils underlain by hardpan, or clear-water pools formed in sandstone depressions	No Potential. Suitable habitat not present on the Project site.
California freshwater shrimp <i>Syncaris pacifica</i>	FE CE	Low-elevation and low gradient perennial freshwater streams with exposed roots, undercut banks, overhanging woody debris, or overhanging vegetation.	No Potential. Suitable habitat not present on the Project site.
Serpentine cypress wood-boring beetle <i>Trachykele hartmani</i>	SA	Restricted to serpentine cypresses.	No Potential. Suitable habitat not present on the Project site.
Serpentine cypress long-horned beetle <i>Vandykea tuberculata</i>	SA	Restricted to serpentine cypresses.	No Potential. Suitable habitat not present on the Project site.
Fish			
Russian River tule perch <i>Hysterothorax traskii pomo</i>	CSC	Restricted to the lower reaches of the Russian River and its tributaries. Requires clear, flowing water and abundant cover.	No Potential. Suitable habitat not present on the Project site.
River lamprey <i>Lampetra ayresii</i>	CSC	Generally large permanent coastal streams with clean, gravelly riffles for spawning and sand backwaters or stream edges for larvae.	No Potential. Suitable habitat not present on the Project site, but species known from the main stem of Mark West Creek.
Navarro roach <i>Lavinia symmetricus navarroensis</i>	CSC	Restricted to the warmer reaches of the Russian and Navarro rivers.	No Potential. Suitable habitat not present on the Project site.
Hardhead <i>Mylopharodon conocephalus</i>	CSC	Undisturbed areas of larger middle- and lower-elevation streams.	No Potential. Suitable habitat not present on the Project site.
Coho salmon – Central California Coast DPS <i>Oncorhynchus kisutch</i>	FE CE	Spawn in cool, clear coastal streams featuring suitable gravel size, depth, and current velocity. Streamside vegetation and cover area essential for fry survival.	No Potential. Suitable habitat not present on the Project site, but species known from Mark West Creek and its tributaries.
Steelhead – Central California Coast DPS <i>Oncorhynchus mykiss</i>	FT	Spawn in cool, clear coastal streams featuring suitable gravel size, depth, and current velocity. Streamside vegetation and cover area essential for fry survival.	No Potential. Suitable habitat not present on the Project site, but species known from Mark West Creek and its tributaries.
Chinook salmon –California Coast DPS <i>Oncorhynchus tshawytscha</i>	FT	Spawn in cool, clear coastal streams featuring suitable gravel size, depth, and current velocity. Streamside vegetation and cover area essential for fry survival.	No Potential. Suitable habitat not present on the Project site.

TABLE BIO-2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Habitat	Potential to Occur
Amphibians			
California tiger salamander <i>Ambystoma californiense</i>	FT CT CSC	Grasslands and open oak woodlands; necessary habitat components include ground squirrel or gopher burrows for underground retreats, and breeding ponds such as seasonal wetlands, vernal pools, or slow-moving streams that do not support predatory fish or frog populations.	No Potential. Suitable habitat not present on the Project site; site is beyond the distributional range of the species.
Foothill yellow-legged frog <i>Rana boylei</i>	CSC	Partially shaded, low-gradient streams and riffles with a rock substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying and, at least, 15 weeks to attain metamorphosis.	Moderate Potential. Suitable habitat present on the Project site, but not within the limits of the proposed winery development site. Species not found during field surveys, but known from Mark West Creek.
California red-legged frog <i>Rana draytonii</i>	FT CSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development; must have access to aestivation habitat.	Moderate Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during protocol-level surveys.
Reptiles			
Western pond turtle <i>Emys marmorata</i>	CSC	Variety of aquatic habitats, both permanent and intermittent, with suitable aerial and aquatic basking sites. Needs upland habitats for nesting, overwintering, and aestivating.	Moderate Potential. Suitable habitat present on the Project site including the proposed winery development site, but species not found during field surveys.
Birds			
Cooper's hawk (Nesting) <i>Accipiter cooperii</i>	SA	Nests primarily in mature forest, either broadleaf or coniferous, but also open woodland and forest edge.	High Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.
Sharp-shinned hawk (Nesting) <i>Accipiter striatus</i>	SA	Young, dense, mixed or coniferous woodlands are preferred for nesting.	Present. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species observed flying over the Project site during field surveys.
Tricolored Blackbird (Nesting colony) <i>Agelaius tricolor</i>	CSC	Requires open water, protected nesting substrate, and suitable foraging area providing adequate insect prey within a few miles of the nesting colony.	Low Potential. Suitable nesting habitat present on the Project site, but site lacks suitable foraging habitat. Species not found during field surveys and not known from Project vicinity.
Grasshopper sparrow (Nesting) <i>Ammodramus savannarum</i>	CSC	Dense grasslands on rolling hills, lowland plains, in valley and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs, and scattered shrubs. Loosely colonial when nesting	Moderate Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.
Bell's sage sparrow <i>Amphispiza belli belli</i>	SA	Chaparral dominated by chamise and /or California sagebrush. Nests on ground or in a shrub.	Moderate Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.

TABLE BIO-2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Habitat	Potential to Occur
Birds (cont.)			
Great egret (Nesting colony) <i>Ardea alba</i>	SA	Shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields. Nests primarily in tall trees, usually with other colonial water birds.	Moderate Potential. Suitable nesting and foraging habitat present on the Project site, but not within the limits of the proposed winery development site. Species not found during field surveys.
Great blue heron (Rookery site) <i>Ardea herodias</i>	SA	Shores of coastal estuaries and fresh and saline emergent wetlands. Nests commonly high in tops of secluded large snags or live trees.	Present. Suitable nesting and foraging habitat present on the Project site, but not within the limits of the proposed winery development site. Species found during field surveys.
Golden eagle (Nesting and Wintering) <i>Aquila chrysaetos</i>	FPS	Generally open country, in prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions. Nests on rock ledge of cliff or in large tree.	Low Potential. Suitable nesting and foraging habitat present on the Project site, but species not known from Project vicinity. Species not found during field surveys.
Long-eared owl (Nesting) <i>Asio otus</i>	SA	Requires riparian habitat, but also uses other wooded areas with dense vegetation for roosting and nesting. Forages in open areas and occasionally in woodland and forested habitats.	Moderate Potential. Suitable nesting and foraging present on the Project site including the proposed winery development site.
Oak titmouse (Nesting) <i>Baeolophus inornatus</i>	SA	Variety of habitats, but primarily associated with oaks. Nests in natural tree cavity.	Present. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species found during field surveys.
Ferruginous hawk (Wintering) <i>Buteo regalis</i>	SA	Prefer open grasslands and shrubsteppe communities. Uses native and tame grasslands, pastures, hayland, cropland, and shrubsteppe.	Low Potential. Suitable wintering habitat present on the Project site, but species not known from Project vicinity.
Vaux's swift (Nesting) <i>Chaetura vauxi</i>	CSC	Prefers Douglas-fir and redwood habitats with nest-sites in large hollow trees and snags.	Moderate Potential. Suitable nesting and foraging present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.
Northern harrier (Nesting) <i>Circus cyaneus</i>	CSC	Marshes, meadows, grasslands, and cultivated fields. Nests on ground commonly near low shrubs, in tall weeds or reeds.	Low Potential. Suitable foraging habitat present on Project site, but site lacks suitable nesting habitat. Species not found during field surveys and not known from Project vicinity.
Olive-sided flycatcher (Nesting) <i>Contopus cooperi</i>	CSC	A wide variety of forest and woodland habitats including mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine.	High Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.
Black swift (Nesting) <i>Cypseloides niger</i>	CSC	Breeds in small colonies behind or beside permanent or semipermanent waterfalls, on perpendicular cliffs near water, and in sea caves. Forages far from nest and over a wide variety of habitats to locate insect prey.	Low Potential. Suitable foraging habitat present on the Project site, but site lacks suitable nesting habitat. Species not found during field surveys and not known from Project vicinity.
Snowy egret (Nesting colony) <i>Egretta thula</i>	SA	Shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields. Nests in trees within dense marshes.	Moderate Potential. Suitable nesting and foraging habitat present on the Project site, but not within the limits of the proposed winery development site. Species not found during field surveys.

TABLE BIO-2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Habitat	Potential to Occur
Birds (cont.)			
White-tailed kite <i>Elanus leucurus</i>	FPS	Savanna, open woodland, marshes, partially cleared lands and cultivated fields, mostly in lowland habitats. Nests in trees, often near marshes.	Moderate Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.
Merlin (Wintering) <i>Falco columbarius</i>	SA	A wide variety of habitats including marshes, deserts, seacoast, near coastal lakes and lagoons, open woodlands, fields, etc. May roost in conifers in winter.	Low Potential. Suitable wintering habitat present on the Project site, but species not known from Project vicinity.
Prairie falcon (Nesting) <i>Falco mexicanus</i>	SA	Distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Usually nests in a scrape on a sheltered ledge of a cliff overlooking a large open area.	Low Potential. Suitable foraging habitat present on the Project site, but Project site lacks suitable nesting habitat. Species not found during field surveys, but known from Project vicinity.
American peregrine falcon <i>Falco peregrinus anatum</i>	FD CD FPS	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, and mounds, as well as human-made structures. Nest consists of a scrape on a depression or ledge in an open site.	Moderate Potential. Suitable foraging habitat present on the Project site, but Project site lacks suitable nesting habitat. Species not found during field surveys, but known from Project vicinity.
Bald eagle (Nesting and Wintering) <i>Haliaeetus leucocephalus</i>	FD CE FPS	Ocean shore, lake margins, and rivers for both nesting and wintering. Nesting habitats are mainly in mountain and foothill forest and woodlands within one mile of water. Nests in large, old-growth, or dominant live tree with open branches. Roosts communally in winter.	Low Potential. Suitable nesting and wintering habitat present on the Project site, but Project site lacks suitable foraging habitat. Species not found during field surveys and not known from Project vicinity.
Yellow-breasted chat (Nesting) <i>Icteria virens</i>	CSC	Require riparian habitats with well-developed shrub layer and an open canopy.	Low Potential. Suitable nesting and foraging habitat present on the Project site, but species not known from Project vicinity.
Loggerhead shrike (Nesting) <i>Lanius ludovicianus</i>	CSC	Shrublands or open woodlands with a fair amount of grass cover and area of bare ground.	Low Potential. Suitable nesting and foraging habitat present on the Project site, but species not known from Project vicinity.
Osprey (Nesting) <i>Pandion haliaetus</i>	SA	Associated with large, fish-bearing waters, primarily in ponderosa pine and mixed conifer habitats.	Low Potential. Suitable nesting habitat present on the Project site, but Project site lacks suitable foraging habitat. Species not found during field surveys and not known from Project vicinity.
Nuttall's woodpecker (Nesting) <i>Picoides nuttallii</i>	SA	Oak woodland and forest, chaparral, and riparian woodland habitats.	High Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.
Purple martin (Nesting) <i>Progne subis</i>	CSC	A wide variety of open and partly open habitats, frequently near water or around towns. Nests in tree cavities, abandoned woodpecker holes or crevices in rocks.	Moderate Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.

TABLE BIO-2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Habitat	Potential to Occur
Birds (cont.)			
Allen's hummingbird (Nesting) <i>Selasphorus sasin</i>	SA	Sparse and open woodlands, coastal redwoods, and sparse to dense scrub habitats.	High Potential. Suitable nesting and foraging habitat present on the Project site including the proposed winery development site. Species not found during field surveys, but known from Project vicinity.
Hermit warbler (Nesting) <i>Setophaga occidentalis</i>	CSC	Mature stands of coniferous forest with open to dense canopy.	Low Potential. Suitable nesting and foraging habitat present on the Project site, but species not known from Project vicinity. Species not found during field surveys.
Yellow warbler (Nesting) <i>Setophaga petechia</i>	CSC	Lowland and riparian woodlands dominated by cottonwoods, alders, or willows, and other small trees and shrubs typical of low, open-canopy riparian woodlands.	Low Potential. Suitable nesting and foraging habitat present on the Project site, but not on the proposed winery development site. Species not found during field surveys.
Northern spotted owl <i>Strix occidentalis caurina</i>	FT CSC	Generally found in mature and old-growth forest, supporting the following elements: high canopy closure; a multilayered, multispecies canopy with larger overstory trees; and a presence of broken-topped tree or other nesting platforms.	High Potential. Suitable nesting, roosting, and foraging habitat present on the Project site. Species detected in Project vicinity during protocol-level surveys.
Mammals			
Pallid bat <i>Antrozous pallidus</i>	CSC	Arid deserts and grasslands of low elevations; often near rocky outcrops and water. Usually roosts in rock crevice or building, less often in cave, tree hollow, mine, etc. Prefers narrow crevices in caves as hibernation sites.	Moderate/High Potential. Suitable foraging and roosting (day/night) habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	CSC	Mesic habitats characterized by coniferous and deciduous forest, but occupy a variety of habitats. Maternity and hibernation colonies typically are in caves and mine tunnels. Uses caves, mines, buildings, and other man-made structures for roosting	Moderate/High Potential. Suitable foraging habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.
Silver-haired bat <i>Lasionycteris noctivagans</i>	SA	Prefers forested areas adjacent to lakes, ponds, and streams. Summer roosts and nursery sites are in tree foliage, cavities, or under loose bark, sometimes in buildings.	Moderate/High Potential. Suitable foraging and roosting (day/night/ maternity) habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.
Hoary bat <i>Lasiurus cinereus</i>	SA	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for foraging.	Moderate/High Potential. Suitable foraging and roosting (day/night/ maternity) habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.
Long-eared myotis <i>Myotis evotis</i>	SA	Usually associated with coniferous forests, but also found in semiarid shrublands and agricultural areas. Typical roost sites include under exfoliating tree bark and in hollow trees, caves, mines, cliffs, crevices, sinkholes, and rock outcrops on the ground.	Moderate/High Potential. Suitable foraging and roosting (day/night/ maternity) habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.
Fringed myotis <i>Myotis thysanodes</i>	SA	Wide variety of habitats but most common in woodlands. Roosts in crevices in buildings, underground mines, rocks, cliff faces, and bridges, although roosting in decadent trees and snags is also common.	Moderate/High Potential. Suitable foraging habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.

TABLE BIO-2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Common Name Scientific Name	Status	Habitat	Potential to Occur
Mammals (cont.)			
Long-legged myotis <i>Myotis volans</i>	SA	Primarily found in coniferous forest, but also found in riparian and desert habitats. Uses abandoned buildings, cracks in the ground, cliff crevices, exfoliating tree bark, and hollows within snags as summer day roots; caves and mine tunnels as hibernacula.	Moderate/High Potential. Suitable foraging and roosting (day/night/ maternity) habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.
Yuma myotis <i>Myotis yumanensis</i>	SA	Wide variety of habitats including riparian, arid scrublands and deserts, and forest associated with permanent sources of water. Uses bridges, buildings, cliff crevices, caves, mines, and bridges for roosting.	Moderate/High Potential. Suitable foraging habitat present on the Project site including the proposed winery development site. Unidentified bat species observed during field surveys.
American badger <i>Taxidea taxus</i>	CSC	Prefers open areas with friable soils but also frequents shrublands with little groundcover. When inactive, occupies underground burrows.	Low Potential. Suitable habitat present on the Project site including the proposed winery development site, but species or evidence of species not found during field surveys and species not known from Project vicinity.

CODES:

FC: Federal Candidate for listing	CE: State of California listed as Endangered	CD: State of California Delisted
FE: Federally listed as Endangered	CT: State of California listed as Threatened	FPS: California Fully Protected Species
FT: Federally listed as Threatened	CP: State of California Proposed for listing	SA: CDFG Special Animal
FD Federal Delisted	CSC: California Species of Special Concern	MMPA: Marine Mammal Protection Act

POTENTIAL TO OCCUR

No Potential – Those species for which there is no suitable habitat present on the Project site (i.e., habitats on the Project site are unsuitable for the species requirements [e.g., foraging, breeding, cover, substrate, elevation, hydrology, vegetation community, disturbance regime, etc.]). The species has no or an extremely low probability of being found on the Project site.

Low Potential – Those species for which limited suitable habitat is present on the Project site (i.e., habitats on the Project site are mostly unsuitable or of very low quality). Additionally, there may be no or few known records of occurrence in the vicinity of the Project site. The species has a low probability of being found on the Project site.

Moderate Potential – Those species for which suitable habitat is present on the Project site (i.e., habitats on the Project site are mostly suitable or of marginal quality). Additionally, there may be no, few, or many known records of occurrence in the vicinity of the Project site. The species has a moderate probability of being found on the Project site.

High Potential – Those species for which highly suitable habitat is present on the Project site (i.e., habitats on the Project site are mostly of high quality). Additionally, there may be few or many known records of occurrence in the vicinity of the Project site. The species has a high probability of being found on the Project site.

Present – Those species for which were found on the Project site (i.e., the species was either found during Project site surveys or a known occurrence is recorded on the Project site).

SOURCES: Prunuske Chatham, Inc., 2010; Ted Winfield & Associates et al., 2011; Ted Winfield & Associates, 2012; CDFG, 2012; USFWS, 2012a; Moyle, 2002; Zeiner et al., 1988, 1990a, and 1990b; Burrige, 1995; Shuford and Gardali, 2008.

