Response to Comments Document

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. CEQA Process

On August 8, 2012, the County of Sonoma (the Lead Agency) released for public review a Draft Environmental Impact Report (Draft EIR or DEIR) on the proposed Henry Cornell Winery. A 45-day public review and comment period on the Draft EIR began on August 8, 2012, and closed on September 24, 2012. The County also held a public hearing to receive oral public comment on the Draft EIR at the Sonoma County Permit and Resource Management Department (PRMD), at 2550 Ventura Avenue in Santa Rosa on September 6, 2012.

The Draft EIR for the proposed Henry Cornell Winery, together with this Response to Comments Document, constitute the Final EIR for the proposed Project. The Final EIR is an informational document prepared by the Lead Agency that must be considered by decision-makers before approving the proposed project (CEQA *Guidelines,* Section 15090). California Environmental Quality Act (CEQA) *Guidelines* (Section 15132) specify the following:

> "The Final EIR shall consist of:
>
> (a) The Draft EIR or a revision of that draft.
>
> (b) Comments and recommendations received on the Draft EIR either verbatim or in a summary.
>
> (c) A list of persons, organizations, and public agencies commenting on the Draft EIR.
>
> (d) The responses of the Lead Agency to significant environmental points raised in review and consultation process.
>
> (e) Any other information added by the Lead Agency."

This document has been prepared pursuant to CEQA and in conformance with the CEQA *Guidelines*. This Response to Comments Document incorporates comments from public agencies and the general public, and contains appropriate responses by the Lead Agency to those comments.

B. Method of Organization

This EIR Response to Comments Document for the proposed Henry Cornell Winery contains information in response to comments raised during the public comment period.

Chapter I describes the CEQA process and the organization of this Response to Comments Document.

Chapter II contains master responses. Numerous comments pertained to a number of similar issues. The master responses provide detailed information related to each of these key issue areas in one place rather than dispersing this information throughout the document.

Chapter III contains a list of all persons and organizations that submitted written comments and/or made spoken comments on the Draft EIR during the public review period.

Chapter IV contains copies of the comment letters and public hearing minutes, and the responses to those comments. Within each letter and public hearing minutes, individual comments are labeled with a number in the margin. Immediately following the comment letter are responses to each of the numbered comments.

Chapter V contains an errata identifying text changes to the Draft EIR. Some changes were made by the County; others were made in response to comments received on the Draft EIR.

CHAPTER II
Master Responses

A. Index of Master Responses

Master Response GEO-1: Adequacy of Slope Stability Analysis for Proposed Winery Buildings Site. This master response addresses concerns raised about slope stability of the winery buildings site, including methodologies and analysis. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's geotechnical studies as they may relate to adequacy of the Draft EIR.

Master Response GEO-2: Adequacy of Geotechnical Analysis for Proposed Rainwater Harvesting Tanks Site. This master response addresses concerns raised about slope stability for the proposed rainwater harvesting tanks site, including methodologies and analysis. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's geotechnical studies as they may relate to adequacy of the Draft EIR.

Master Response GEO-3: Geologic Stability of Proposed Leach Field. This master response addresses concerns raised about geologic stability for the proposed leach field site, including methodologies and analysis. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's geotechnical studies as they may relate to adequacy of the Draft EIR.

Master Response HYD-1: Adequacy of Groundwater Analysis. This master response addresses concerns raised about the adequacy of the groundwater analysis, including compliance with the Sonoma County Water Element Policy WR-2(e) and Sonoma County Groundwater Checklist. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's groundwater availability studies as they may relate to adequacy of the Draft EIR.

Master Response BIO-1: Adequacy of Biological Surveys. This master response addresses comments made on the plant and animal survey methods and results. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's biological resources report as they may relate to adequacy of the Draft EIR.

Master Response BIO-2: Animals Included from Special-Status Species Analysis. This master response responds to concerns expressed that several special-status species were not included in the applicant's biological resources report, resulting in an incomplete or inadequate

special-status species analysis. Please note all of these comments were made in response to the Notice of Preparation, and are not new comments on the Draft EIR.

Master Response BIO-3: Adequacy of Special-Status Bird Analysis. This master response responds to comments made on the adequacy of the special-status bird analysis, including survey methods and results, and prescribed mitigation. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's biological resources report as they may relate to adequacy of the Draft EIR.

Master Response BIO-4: Adequacy of Northern Spotted Owl Analysis. This master response addresses comments made on the analysis of the northern spotted owl, including survey methods and protocols uses, and comments made on the dusky-footed woodrat and barred owl. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's biological resources report as they may relate to adequacy of the Draft EIR.

Master Response BIO-5: Adequacy of Special-Status Bat Analysis. This master response addresses the analysis of special-status bat species, including bat surveys methods and prescribed mitigation. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's biological resources report as they may relate to adequacy of the Draft EIR.

Master Response BIO-6: Adequacy of Narrow-anthered California Brodiaea Analysis. This master response addresses the adequacy of the analysis of the narrow-anthered California brodiaea, a California Native Plant Society List 1B.2 species, and adequacy of the prescribed mitigation, and comments made on past activities associated with these plants on-site. This master response responds to comments made on the adequacy of the Draft EIR, and to relevant comments made on the applicant's biological resources report as they may relate to adequacy of the Draft EIR.

Master Response CUM-1: Consideration of Cumulative Impacts. This master response provides additional information on cumulative impacts.

B. Master Responses

Master Response GEO-1: Adequacy of Slope Stability Analysis for Proposed Winery Buildings Site

[Responds to Comments E-47, F-56, F.C-1 and F.C-4]

Comment E-47 on the Draft EIR addressed the adequacy of the slope stability analysis for the winery buildings site; Comments F-56, F.C-1 and F.C-4 were comments previously made in response to the NOP regarding slope stability. The comments assert that the Draft EIR fails to adequately analyze the risk of slope instability and that the June 2010 geotechnical investigation[1] conducted by the applicant's geotechnical engineer, RGH Consultants (RGH), has "numerous methodological deficiencies," including "failure to complete a comprehensive slope stability analysis," "absence of any large-diameter borings" and inadequate landslide mapping.

The impact analysis in the Draft EIR regarding slope instability and landslides is based on the slope stability analysis completed for the 2010 RGH geotechnical investigation (see Impact B.2, page IV.B-21 in the Draft EIR). The RGH slope stability analysis used an industry-accepted slope stability model Slope/W developed by GEO-SLOPE International Ltd to determine the relative stability of the slopes underlying the proposed winery facilities under both static (i.e. non-earthquake) and pseudo-static (i.e. earthquake ground shaking loads applied). The cross sections developed for the model appropriately represented the critical slopes present at the proposed winery site. As discussed in the Draft EIR (page IV.B-2), 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. The resultant Factors of Safety[2] derived by the slope stability model were greater than or equal to 1.5 for static conditions and greater than 1.0 for earthquake conditions. Based on these results, RGH concluded that the slopes on the main sandstone ridge supporting the winery site would remain stable under static conditions and in the event of an earthquake. The County and its consultants reviewed the RGH slope stability analysis and found that it adequately represents the existing site conditions and provides a reasonable basis for the CEQA impact analysis in the Draft EIR.

Cotton Shires Associates (CSA), a Bay Area engineering and geology firm retained by the County to peer review the 2010 RGH report, concurred with RGH's methodologies and findings. CSA states in its July 2, 2010 letter documenting its review of the June 2010 RGH report:

> "The intact and competent nature of bedrock materials beneath the winery and tank sites has been investigated by seven core borings (39 to 119 feet in depth) and eleven test pits. 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

1 RGH Consultants, 2010, *Geotechnical Study Report, Cornell Winery, 245 Wappo Road, Santa Rosa, California.* June 23.

2 Factors of Safety less than 1.0 indicate that a slope is unstable. Factors of Safety between 1.0 and 1.5 indicate that the slope will remain stable and slope failure is not likely.

> the winery site is favorably located on an intact, bedrock supported ridge displaying signs of long term stability."

Geotechnical methodologies employed by RGH in its 2010 geotechnical study included core drilling, excavation of test pits, and a slope stability analysis using an accepted stability model (described above). As discussed in the Draft EIR, (page IV.B-2 and Figure IV.B-1) the winery site is underlain by sandstone and Mélange of the Franciscan Complex. RGH accurately characterized the subsurface geologic materials using conventional small-diameter exploratory borings during its 2010 geotechnical study. The seven exploratory cores were accurately logged by a qualified field geologist and the information obtained from the subsurface borings informed the analysis of subsurface conditions, including the geologic cross sections and slope stability analysis. Contrary to the commenter's claim, the absence of "large-diameter borings" (Comment E-47) does not render the 2010 RGH geotechnical study deficient. Large diameter borings[3] are necessary on certain sites, especially those that have complex geology or steep slopes. While the Cornell Farms property is sloping and contains mapped landslides, the Project site is a stable sandstone ridge and, according to the numerous test cores and test pits, does not have the type of complex geology that would warrant the use of large–diameter core logging. It should be noted that CSA recommended large diameter borings to evaluate a previously-proposed winery site on the Cornell Farms property west of Wappo Road because that site was comparatively more complex, underlain by dormant landslides and ancient landslide debris. The proposed winery site has since been relocated to its present location on a more stable sandstone ridge east of Wappo Road. (See Chapter III, Project History in the Draft EIR for additional information on prior winery proposals at Cornell Farms.)

The 2010 RGH geotechnical study identified and plotted the landslides, landslide deposits, and other indicators of slope instabilities present on the site through onsite field mapping, use of published maps, and aerial photograph. Information in the Draft EIR was developed from the descriptions, analysis, and associated landslide mapping provided by RGH. The key findings from the 2010 RGH geotechnical study regarding the geology and geologic hazards, including slope instability and existing landslide features are incorporated into the setting and impact analysis in the Draft EIR (see pages IV.B-2, IV.B-11 and IV.B-21). The Draft EIR adequately discloses the landslides and existing slope instabilities on the Project site (see page IV.B-12 and Impact B.2 on page IV.B-21). While there are active landslides, dormant landsides, and ancient landslide deposits on the Cornell Farms property, these slope failures were found not to pose a risk to the proposed Project. From a geotechnical perspective, the presence of landslide features on the Cornell Farms property does not mean the Project site is unstable or that development is geotechnically infeasible. The proposed winery would be constructed on a stable sandstone ridge, as confirmed by work completed by RGH and verified by technical peer review completed by CSA, and further peer-reviewed as part of this EIR.

A small landslide mentioned in the comments that is located approximately 50 feet southeast of the edge of the proposed winery building pad was incorporated into the cross section and was included in the parameters used in the slope stability modeling completed by RGH (see Draft

[3] In some engineering geology investigations, large diameter borings are drilled and then an engineering geologist is lowered into the boring to map the bedrock lithology and structure

EIR, page IV.B-22). Results of the analysis found that the presence of this small landslide at the lower reaches of the slope would not reduce the Factor of Safety of the overall slope that supports the proposed winery. Although active, the landslide is small, shallow, and would not hinder site development or result in a potential environmental impact.

Comments assert that a geologic map showing the landslide features relative to the proposed building footprints has not been made available to the public. Figure IV.B-1 in the Draft EIR presents a geologic map showing the locations of slope failures and indicators of potential slope instability relative to the proposed winery site and related facilities; this map provides a sufficient level of detail for purposes of understanding in the EIR. A more detailed geologic map is presented on Plate 3 of 2010 RGH geotechnical report. A copy of all relevant references in the Draft EIR, including the 2010 RGH geotechnical study, are available for review at the Sonoma County PRMD office at 2550 Ventura Avenue, Santa Rosa.

Comments claim that the RGH investigation and Draft EIR ignore the potential for the landslides on the property to enlarge in an upslope direction and consume the winery building itself. As discussed above, the RGH geotechnical investigation and the Draft EIR clearly acknowledge the location, type, and age of the slope failures on the Cornell Farms property and the analyses presented in the RGH report and the Draft EIR consider the potential for the existing slope instability to affect the proposed Project adversely. Draft EIR Figure IV.B-1 illustrates, and page IV-12 describes in detail, the location of all active, dormant, and ancient landslides in the Project vicinity. The only active landslide in vicinity of the proposed winery buildings is the previously-identified active landslide located approximately 50 feet southeast of the edge of the proposed winery building pad. This landslide is a small and shallow surface failure, and the likelihood that it would propagate upslope and adversely impact the stability of the winery buildings is low. There is also a dormant landslide located southeast of the proposed winery site at the base of a rocky scarp face, however, since this scarp face is stable, composed of sandstone bedrock and vegetated, the potential for this slope to fail is low. All identified landslides to the west across Wappo Road are located comparatively farther from the proposed winery building footprint (120 to 500 feet) and do not pose a threat to stability of the proposed development. Furthermore, proposed site grading and drainage, and additional measures identified as mitigation in the EIR, would ensure that the Project would not increase the potential for upslope failure from the existing landslides in the Project vicinity. This would also ensure that there would be no associated adverse Project effects associated with landslide failure, including sedimentation.

Please see also Master Response GEO-2 for a discussion of how the Draft EIR addressed potential impacts associated with the proposed rainwater harvesting tank site.

Master Response GEO-2: Adequacy of Geotechnical Analysis for Proposed Rainwater Storage Tanks Site

Responds to Comments E-48, E-49, E.A-3, E.A-4, E.A-5, E.A-6, E.A-7, E.A-8, E.A-9, F-58, F.B-3 and F.K-1]

Comments on the Draft EIR that questioned the adequacy of the geotechnical evaluation of the proposed rainwater storage tank site included Comments E-48, E-49, E.A-3, E.A-4, E.A-5, E.A-6, E.A-7, E.A-8 and E.A-9; Comments F-58, F.B-3 and F.K-1 were comments previously made in response to the NOP. The comments claim that the analysis of potential instability of the slopes that would support the rainwater storage tanks and pads is inadequate.

For context, RGH has conducted several site geotechnical investigations in the vicinity of Project site.[4] These include, but are not limited to, a June 2010 geotechnical investigation (discussed in Master Response GEO-1, above) that evaluated geologic hazards and geotechnical feasibility of the winery buildings and domestic water storage tanks / process water treatment facilities at their currently proposed location; an October 2011 geotechnical study report[5] update that addressed the geotechnical and slope stability of the proposed rainwater harvest tank site; and supplemental geotechnical information for the proposed rainwater storage tanks site in June 2012[6]. In addition, on behalf of the County, Cotton Shires Associates (CSA) provided geologic and geotechnical peer review of several of the RGH reports, including, but not limited to, the RGH June 2010 and October 2011 geotechnical studies, in July 2010 and November 2011, respectively. Furthermore, all Project-related geotechnical reports were peer-reviewed as part of this EIR.

Comments assert that the geotechnical analysis of the proposed rainwater tanks site is inadequate and the existing reports have numerous deficiencies. Claims made by commenters of deficiencies in RGHs October 2011 and June 2012 reports focused on the absence of geologic maps and cross sections, inadequate representation of the geologic structure, inadequate or missing laboratory test data, and the lack of a slope stability analysis.

As described in RGH's geotechnical investigations, the geology underlying the proposed rainwater tanks site is similar to that found on the proposed winery site (i.e., the proposed rainwater tanks site is located on spur ridge off of the main sandstone ridge that would support the proposed winery), and consequently, it was appropriate for RGH to use data from the geologic maps, geologic cross sections, aerial photography review, slope stability analysis, and conclusions developed in the 2010 RGH geotechnical study for the winery site in their analysis of the slope stability for the proposed rainwater tanks site. When considered together, the 2010 RGH geotechnical study and RGH's October 2011 supplemental analysis for the proposed rainwater tanks site adequately evaluate the site stability and provides sufficient basis for the impact analysis presented in the Draft EIR.

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4 RGH's geotechnical investigations included field reconnaissance, aerial photography review, geologic mapping, subsurface core drilling, slope stability analysis, and laboratory strengths testing.

5 RGH Consultants, 2011, *Geotechnical Study Report Update, Rain Water Tanks, Cornell Winery, 245 Wappo Road, Santa Rosa, California.* October 21.

6 RGH Consultants, 2012, *Response to Cotton, Shires, and Associates Comments, Rain Water Tanks, Cornell Winery, 245 Wappo Road, Santa Rosa, California,* Letter Report with attachments, June 13.

The comments assert that the June 2012 RGH report prepared did not include data indicating geologic structure at the proposed tank site, including the lack of plotted bedding planes on a geologic map. For the proposed rainwater tank site evaluation, adequate geotechnical data was obtained from the information provided in the 35-foot exploratory boring drilled at the proposed tank site. Because the exploratory boring adequately identified the subsurface lithology and the bedrock materials encountered were similar to that observed underlying the proposed winery site, plotting the bedding planes on the cross section would not have provided additional or useful information to further inform the geotechnical analysis or the impact analysis in the Draft EIR. The comments also state that the sandstone, siltstone, and shale identified in the exploratory boring may represent a potential failure surface and the bedding planes of these bedrock should have been plotted on a geologic map. Because geologic reconnaissance, including aerial photography review, found no evidence of existing or potential slope instability at the proposed rainwater storage tanks site, the lack of bedding orientations on the geologic map does not render the geotechnical analysis and thus, the analysis in the Draft EIR, deficient. Contrary to the point made in these comments, the bedrock encountered in the exploratory boring at the proposed rainwater tank site was not similar to the material that was found underlying the existing landslides on the Cornell Farms property. While the bedrock collectively belongs to the Franciscan Complex, the subsurface material found in the vicinity of the landslides was almost exclusively severely fractured shale, while the bedrock underlying the proposed winery site and rainwater tanks site was a collection of more stable sandstone, siltstone, and shale.

Comments state that the construction of the rainwater tank pad, retaining walls, and placement of compacted soil backfill would add “surcharging” weight to the slope upon which the water tanks would be placed, and that this could reduce slope stability. The addition of concrete tank pads, retaining walls, compacted backfill and other improvements to the rainwater tank site would likely add weight to the building site and that weight would be distributed out toward the slope. The purpose of geotechnical investigations was to evaluate whether the underlying geology can adequately accommodate the added weight of a building or improvement. The geotechnical investigation conducted by RGH, which included the subsurface exploration of the rainwater tank site and winery site and laboratory strength testing of samples representative of the underlying geologic materials, determined that the Franciscan mélange and sandstone would adequately support the loads applied by the structures at the rainwater tank site. In its report, RGH provided recommendations to ensure that the geotechnical issues are adequately addressed and the Project is constructed within acceptable engineering standards. The recommendations included practices for site preparation, pad excavation, grading, retaining walls, fill placement, compaction, and foundation support preparation and foundation work.

Comments claim that the assessment of landslides and slope instability at the rainwater tanks site is inadequate and that landslides have been mapped adjacent to the slopes. This claim is unfounded. RGH, in its extensive study of slope instability and landslides on the Cornell Farms property, did not identify evidence of landslides or slope instability in proximity to the proposed rainwater tanks site during their geotechnical assessment of the tank site or their previous geologic reconnaissance of the Cornell Farms property. The Draft EIR acknowledges that landslides are present on the Cornell Farms property but as discussed in Impact B.2, the identified

landslides would not threaten the proposed Project improvements and would not result in a significant impact related to slope instability. No information has been provided in the comments that would alter the Draft EIR conclusions regarding slope stability and the potential for new or enlarged landslides.

Comments imply that, by reviewing only two aerial photographs of the site and using CDMG Special Report 120 (Geology for Planning in Sonoma County)[7], RGH relied on inadequate and improper data for assessment of the rainwater tank site. That statement is inaccurate because it does not account for numerous exploratory core drilling, previous aerial photograph review, and site field mapping that RGH completed for its 2010 geotechnical study of the proposed winery site. The peer reviews of the RGH studies – those conducted by CSA and the preparers of this EIR – found that the methodologies employed by RGH are reasonable and sufficient to determine feasibility of the Project from a geotechnical perspective, and sufficient for the conclusion reached in the Draft EIR that the Project would not result in significant impacts related to slope stability at the proposed rainwater tanks site. The commenter offers no new information or evidence that would challenge or reduce the validity of the geotechnical analysis completed by RGH or the impact analysis in the Draft EIR.

7 Huffman, M.E., and Armstrong, C.F, 1980, *Geology for Planning in Sonoma County, California: California Division of Mines and Geology Special Report 120*, 31 p., 5 plates.

Master Response GEO-3: Geologic Stability of Proposed Leach Field

[Responds to Comments E-51, E-52, E-53, F-59, F-62 and F.A-4]

Comments on the Draft EIR that addressed the adequacy of the geotechnical stability of the leach field at 560 Wappo Road included Comments E-51, E-52 and E-53; Comments F-59, F-62 and F.A-4 were comments previously made in response to the NOP. The comments claim that the proposed leach field is likely to cause environmental effects because it would be placed in a geologically unstable area underlain by landslides. In addition, Comments E.52 and F-62 assert that the groundwater wells may intersect and extract septic effluent from the leach field.

In a previous winery proposal at Cornell Farms, the leach field was proposed on the 245 Wappo Road property, at a location west of Wappo Road in a sloped area underlain by ancient landslide deposits. However, the proposed site of the leach field has since been relocated to 560 Wappo Road, in the northwestern portion of the Cornell Farms property (see Draft EIR, Figure III-1). The Draft EIR addresses the geologic conditions of the proposed leach field site at 560 Wappo Road (see Impact B.6, page IV.B-27) and states that no landslides were mapped in the proposed leach field location, and that investigations conducted by the applicant's geotechnical engineer, RGH Consultants (RGH), did not observe evidence of landslides during their field reconnaissance and logging of test pits. The bedrock underlying the leach field site was identified as Franciscan Complex sandstone extending to 8½ feet and no groundwater was encountered during the investigation.

The impact analysis in the Draft EIR was based on the geotechnical investigation conducted for the leach field site by RGH. The RGH geologic and slope stability analysis for the 560 Wappo Road leach field location was documented in a letter from RGH to the County of Sonoma PRMD dated September 21, 2009[8]. In that letter, RGH described the exploration of the site, which included a site reconnaissance and geologic logging of seven test pits in 2009. RGH also evaluated slope stability for long-term static conditions and stability under earthquake loading for a Factor of Safety of 1.5 and 1.0, respectively. The slope stability analysis also considered whether the presence of leach field water would reduce the Factor of Safety. Results of the analysis found that static slope stability of the sloped areas supporting the leach field, before and after leach field installation was greater 1.5. Calculation of seismic stability of the leach field site yielded a Factor of Safety greater than 1.0. As discussed in the Draft EIR (Impact B.6) geotechnical analysis of the proposed leach field site reveals that the site is underlain by bedrock on a relatively stable ridge top, located beyond the influence of steep slopes and landslides. Accordingly, the Draft EIR found geotechnical issues related to the proposed leach field less than significant (Impact B.6, page IV.B-27). Accordingly, the potential for the leachfield to trigger a landslide or debris flow and adversely impact water quality and fish habitat would also be less than significant.

8 RGH Consultants, 2009, *Response to BZA Comments, Cornell Winery, 245 Wappo Road, Santa Rosa, California.* September 21.

Comments also assert that the proposed leach field location would draw leachate to groundwater supply wells on the Cornell Farms property. However, the depth of groundwater and the distance between the leach field and the supply wells on the Cornell Farms property is sufficient to preclude contact of septic leachate and the groundwater. Cornell Farms has three groundwater wells in the vicinity of 560 Wappo Road. Well No. 210149 and the Project supply well (Well No. 913154) are located approximately 1,600 feet east-southeast of the proposed leach field and the domestic supply well (Well No. 56397) for 500 Wappo Road is approximately 500 feet to the southeast. Well screens range in depth from 44 feet below ground surface (bgs) to 260 bgs (Draft EIR, Table IV.C-2). Based on these well screen depths, groundwater is estimated between 50 to 100 feet bgs. Because groundwater is well below the surface, it would not be in direct contact with leachate percolating from the proposed leach field and pumping on the Cornell Farms wells would not pull wastewater from the leach field toward the groundwater well. Rather, wastewater applied to the proposed leach field would slowly infiltrate into the subsurface. As with all septic leach fields, the wastewater would be naturally treated as it percolates through the underlying soil and bedrock. Considering the travel distance to the closest supply well (approximately 500 feet) and depth to the underlying groundwater (between approximately 50 and 100 feet) no adverse wastewater effects would be experienced at on-site or off-site wells. The County of Sonoma approved the location of the leach field and as stated in the Draft EIR, the leach field design would be required to comply with relevant state and local requirements and the approved permit would ensure that the proposed leach field would be constructed to function properly.

Master Response HYD-1: Adequacy of Groundwater Analysis

[Responds to Comments E-16, E-17, E-18, E-19, E-20, E-21, E-22, E-23, E.B-1, E.B-2, E.B-3, E.B-4, E.B-5, E.B-6, F-17, F-18, F-19, F-20, F-21, F-22, F.D-1, F.D-3, F.D-4, F-.D-5, F.D-6, F.D-7, F.D-8, F.D-12, F.L-1 and G-8]

Comments on the Draft EIR that addressed the adequacy of the groundwater analysis and compliance with the Sonoma County Water Element Policy WR-2(e) and Sonoma County Groundwater Checklist, included Comments E-16, E-17, E-18, E-19, E-20, E-21, E-22 and E-23, Comments F-17, F-18, F-19, F-20, F-21, F-22, F.D-1, F.D-2, F.D-3, F.D-4, F.D-6, F.D-7 and F.L-1 were comments previously made in response to the NOP. This master response is divided into two subsections that address the comments made on the adequacy of the Todd Engineers Supplemental Water Availability Study, and comments made requesting the use of a Constant Rate Aquifer Test to evaluate impacts of the proposed Project on groundwater resources.

Adequacy of 2006 Todd Engineers Supplemental Groundwater Availability Study

Comments assert that the 2006 Todd Engineers *Supplemental Groundwater Availability Study for Cornell Farms,* August 2006 (Todd Study) is inadequate and arrived at unreliable conclusions. In addition, the comments imply that after five years, the Todd Study is out-of-date and no longer can be relied upon to analyze the potential impacts of the Project on groundwater resources.

For context, the applicant has completed two groundwater availability studies for the Cornell Farms property. The first was prepared in July 2004 by RGH Consultants (RGH)[9] in support of a previous winery proposal on the 420 Wappo Road property. In 2006, the applicant retained Todd Engineers (Todd) to conduct a groundwater availability study (2006 Todd Study) to supplement the study completed by RGH in 2004. The 2006 Todd Study and the hydraulic properties derived by that study are discussed in the Draft EIR, page IV.C-8. Todd's scope of work for the 2006 Todd Study included: 1) reviewing the 2004 RGH Study; 2) conducting a site reconnaissance; 3) deriving hydrogeologic parameters from a review and tabulation of all the Department of Water Resources (DWR) Water Well Drillers Reports for the study area, which included 88 well logs from local wells, in addition to those prepared for Cornell Farms wells; 4) reviewing California Division of Mines and Geology and the U.S. Geological Survey (USGS) geologic maps, available site specific geologic reports, and available data on rainfall, evapotranspiration (ET), and stream flow; and 5) preparing a water balance as a tool to analyze potential hydrologic impacts. Todd used the Sonoma County Groundwater Studies Checklist as a framework for evaluating groundwater effects in preparing their study. The Todd Study, including the completed checklist, was reviewed by the County and its engineering consultant, Kleinfelder Inc. Kleinfelder found Todd's methodology and conclusions sound and reasonable.[10]

9 RGH Consultants, 2004, *Groundwater Availability Study, Cornell Winery and Vineyard, Santa Rosa, California.* July 15

10 County of Sonoma PRMD, 2010 Board of Zoning Adjustments (BZA) Memorandum *UPE07-0008; W. Guy Davis for Henry Cornell Winery, 100, 245, and 560 Wappo Road, Santa Rosa,* September 23.

The 2006 Todd Study is a comprehensive evaluation of the local and regional groundwater conditions. The associated water balance provides water inventory parameters that adequately evaluate the basin's response to groundwater pumping. The study fulfilled the requirements of the Sonoma County Groundwater Studies Checklist. Therefore, the Todd Study is sufficient for the purposes of supplementing information previously provided by RGH and to evaluate potential impacts that the proposed Project would have on groundwater resources.

Comments received on the Draft EIR and in response to the NOP claim that the 2006 Todd Study is insufficient because it relied on regional maps that are not suitable for characterizing individual sites. In order to evaluate how Project-related groundwater pumping would impact the local hydrogeologic system, it was necessary for Todd to develop an understanding of the surrounding geology and groundwater characteristics on both a project scale and a larger regional scale. To accomplish that, Todd used information from two published 1:62,500 scale geologic maps.[11] These maps were prepared by the USGS and the California Geological Survey and are currently accepted by the scientific community as representative of the geologic conditions in this region. In using the two published maps, Todd was able to construct a local geologic map of Cornell Farms and vicinity (Figure 4 of the 2006 Todd Study), and from that map, develop a cross section of the regional geology and groundwater system (Figure 5 of the 2006 Todd Study). The scale and coverage of the geologic map and cross sections developed by Todd provide a reasonable basis to evaluate groundwater occurrence and flow in the region surrounding Cornell Farms. Consequently, Todd's approach of representing the hydrogeologic system by using larger scale maps is appropriate for this type and scale of groundwater evaluation.

Other comments claim that the Todd Study is inadequate because there was no independent geologic investigation of the site. This is not an accurate claim because evaluating groundwater resources requires a regional perspective of the areal geology, such as that which Todd developed. Completing a site-specific geologic investigation of the site for purposes of the groundwater study may have provided more detail on only a small portion of the groundwater system but would not have resulted in new, pertinent information on groundwater flow and occurrence. It should be noted that Todd's investigation included the review of 88 well logs from nearby groundwater wells, including those on the Cornell Farms property. Review of the groundwater well logs in conjunction with the use of regional geologic maps provided Todd with a reliable understanding of the geology of the Project site and vicinity.

Other comments claim that the 2006 Todd Study is deficient because it measured the flow in Mark West Creek at a USGS gauge 17 miles from the Project site. The stream gauge that the comments refer to was located at the bridge of Highway 101 and 4.5 miles southeast of Windsor. The drainage area above the gauge site is 43 square miles. The data from this gauge is limited to the months of April 1940 to September 1941. Todd incorporated these data into the water balance analysis to illustrate a comparison of surface water runoff between the Cornell Farms property and the North and South watersheds that encompass the Project site. Although the stream flow data only represents a brief time period in the 1940s, Todd used it for the water balance because it

[11] Fox, K.F, 1973, Preliminary Geology Map of the Eastern Sonoma County and Western Napa County, California, U.S. Geological Survey Miscellaneous Field Studies Map MF-483, Basic Data Contribution 56, Scale 1:62,500; and Huffman, M.E. and C.F. Armstrong, 1980, Geology for Planning in Sonoma County, California, California Division of Mines and Geology Special report 120. Scale 1:62,500.

is available, pertinent, and assisted in the water balance analysis. Contrary to what the comment implies, use of the data does not render the water balance or entire report deficient. Rather, the report uses available data to enhance the analysis and provide a meaningful comparison of the magnitude of stream flow in the Upper Mark West watershed.

Regarding commenters' claims that the 2006 Todd Study is out-of-date and is no longer reliable to support the analysis of groundwater use in the Draft EIR, the 2006 Todd Study was based on geologic, hydrogeologic, and soil characteristics of the Cornell Farms property and the immediate vicinity (i.e., North and South watersheds and surrounding areas). Aquifer parameters of specific capacity, transmissivity, and storativity were derived from up to 88 existing Well Driller Reports. Elements of the water balance assumptions including rainfall and ET used by Todd were based on available historical records. There is no evidence indicating that the intrinsic hydraulic properties of the aquifer or key components of the water balance from the 2006 Todd Study, including average annual rainfall and relationships of groundwater recharge, surface water runoff, and ET have changed since the completion of the 2006 study.

Other than the comments discussed above (i.e., Todd's use of regional maps, its use of downstream stream gauge data, and the completion date of the report) and the claim that an aquifer test was not completed (addressed below), the assertion that the Todd Study is "completely inadequate" is not supported by any additional specific evidence regarding Todd's overall technical approach, hydraulic properties used in Todd's analysis, or the water balance developed by Todd. The claims that the Todd Study is "subpar" and is "completely inadequate" are unfounded. Commenters provide no additional substantive comments questioning the study's technical sufficiency.

Finally, it is also important to understand the context under which the Todd study was prepared and how it relates to the current Project. Specifically, as with the 2004 RGH Study, the Todd Study analyzed a previous winery proposal on the Cornell Farms property that did not incorporate any rainwater harvesting. Consequently, the Todd Study did not account for the substantial offset in groundwater use at Cornell Farms that would be provided by the proposed use of harvested rainwater to supplement irrigation of the Cornell Farms vineyards under the Project. Furthermore, the Todd Study did not account for the substantial additional offset in groundwater use at Cornell Farms that would be provided by the proposed use of treated winery process water to supplement irrigation of the Cornell Farms vineyards under the Project. In addition, the Todd Study also used a highly conservative (i.e., high-end) estimate of groundwater demand from the adjacent Cornell Farms vineyards in their water balance calculations, which also included separate groundwater demand associated with the previous winery proposal. As a result, the Todd Study considered potential groundwater effects associated with an increase in annual groundwater pumping with the previous winery proposal. However, as explained in detail in Impact C.3 in the Draft EIR, 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 would result in a net reduction in annual groundwater pumping at Cornell Farms under Project conditions as compared to existing conditions. Furthermore, the proposed winery would limit pumping of the Project 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. 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 Draft EIR finds that the proposed Project's effect on the aquifer, groundwater levels, and neighboring wells and local surface waters would be less than significant (see Draft EIR Section IV.C, Hydrology and Water Quality, Impact C.3 and C.4).

The Use of Constant Rate Aquifer Test

Comments claim that the Draft EIR is inadequate because a constant rate aquifer test was not completed as part of the environmental review process and that such a test is required to evaluate the effects of groundwater pumping on a local scale and to determine effects on dry-season baseflow in the creeks. The comments also state that because the constant rate aquifer test was not completed, the Project fails to comply with the Sonoma County Groundwater Checklist, in addition to Sonoma County General Plan Water Element Policy WR-2e. This response first discusses the regulatory requirements for aquifer testing under General Plan Policy WR-2e and then discusses the technical aspects of aquifer testing and why it is inappropriate and unnecessary to conduct a constant rate aquifer test for the proposed Project.

The following describes the General Plan Policy WR-2e and the County's Groundwater Studies Checklist:

General Plan Water Element Policy WR-2e

General Plan Water Element Policy WR-2e states the following:

> ***Policy WR-2e:*** *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.*

Groundwater Studies Checklist

This Groundwater Studies Checklist was developed to provide County staff with a more formal, empirically-based means for evaluating hydrogeology reports for projects, and as a basis for identifying projects with potentially critical groundwater issues that may require additional third party review as determined by the County. While intended to be used in assisting the County in evaluating technical reports, the Checklist is not a County ordinance used for enforcement.

County Requirement for Well Tests Under General Plan Policy WR-2e

As indicated above, General Plan Policy WR-2e requires proof of adequate groundwater in Class 3 and Class 4 areas. As discussed in the Draft EIR, (Page IV.C-8) 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 production well that would provide groundwater for the winery is located in Zone 4. The line dividing Zone 3 and Zone 4 closely follows the thrust fault/bedrock contact between the Franciscan Complex and volcanic bedrock.

Policy WR-2e requires "test wells or the establishment of community water systems in Class 4 areas." The clear intent of the policy was to require proof of groundwater adequacy, with a focus on domestic wells. The Procedures to Implement Policy WR-2e were developed by the County to implement this General Plan policy; these Procedures reference Sections 7-12 and 25-179 of the County Code, both of which set forth standards for residential uses only. Consequently, these County codes do not strictly apply to the proposed Project.

Policy WR-2e does not require a test well to address potential impacts of a well on neighboring wells or on surface water resources. It requires a test of the adequacy of groundwater supply for the Project and to establish whether the Project would result in an adverse cumulative impact on groundwater supply. The Project would use an existing groundwater well that has been utilized by the Cornell Farms vineyards since 2004. With regard to the adequacy of groundwater supply for the Project, the Draft EIR reviews existing use of groundwater by Cornell Farms, analyzes proposed groundwater use, and concludes that the Project would result in a net decrease in annual groundwater pumping at Cornell Farms compared to existing conditions, including a reduction of existing groundwater pumping during the critical dry season months of August through October (see discussion of Impacts C.3 and C.4 in Section IV.C, Hydrology and Water Quality). Consequently, the Project would result in a less-than-significant impact on the aquifer, groundwater levels, and neighboring wells and local surface waters. The Draft EIR also discusses the potential for cumulative impacts of the Project, including cumulative impacts on groundwater resources and streamflow (see discussion of Impact C.6 in Section IV.C, Hydrology and Water Quality), and concludes that the Project would not make a cumulatively considerable contribution to existing and ongoing cumulative hydrologic effects; accordingly, the cumulative impact is also less than significant.

From a technical standpoint, a constant rate aquifer test is not necessary or appropriate to analyze the impacts of the proposed Project. A constant rate aquifer test is not a reasonable methodology for determining groundwater availability at this site. A constant rate aquifer test would require drilling of additional monitoring wells, cooperation and coordination with neighboring well owners, and continual monitoring. Even then, the results of the test would likely be inconclusive. This is because the groundwater in this area, as described in the Draft EIR, page IV.C-8) is controlled by joints, cracks, and fractures in the bedrock geologic units of the Franciscan Complex and Sonoma Volcanics (referred to as secondary porosity), and not by inter-granular porosity typical of an alluvial geologic unit. 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[12]. While it may be technically feasible to conduct a constant rate aquifer test at Cornell Farms, the underlying bedrock hydrogeology and associated secondary porosity would render the results inaccurate or otherwise inconclusive and generally unrepresentative of the groundwater conditions.

[12] Todd Engineers, *Supplemental Groundwater Availability Study for Cornell Farms, Sonoma County, California*. August 2006.

Master Response BIO-1: Adequacy of Biological Surveys

[Responds to Comments E-34, E-38, F-37, F-40, F.E-1, F.E-4, F.E-4, F.E.-5, F.E-41, F.E-47, F.E-49, H-7 and PC-3]

Comments on the Draft EIR that addressed the adequacy of the biological surveys included Comments E-34, H-7 and PC-3; Comments F-37, F.E-5 and F.E-47 were previously made in response to the NOP. The Draft EIR, Section IV.D, Biological Resources, incorporated information as applicable from biological resources reports prepared by the Project applicant's biological consultants for the proposed Project. A number of comments expressed concern that the survey methods and results documented in these reports were incomplete and inadequate for use in the Draft EIR to assess plant and animal species present on the Project site and to evaluate impacts to these species from development of the proposed Project. The comments state that the surveys completed for the existing biological resources reports were not conducted during the appropriate time of day and/or season and, therefore, that these surveys did not detect all of the species potentially present on the Project site, and that additional surveys are necessary to provide a complete inventory of the plant and animal species on the site. Also, some comments stated that the extent of the survey area was not sufficient to provide adequate coverage of those species that could be impacted by development of the proposed Project. This master response addresses these concerns. Please refer to Master Responses BIO-3 and BIO-5 for responses specific to comments regarding the adequacy of the special-status bird analysis and special-status bat analysis, respectively.

As described in the Draft EIR on page IV.D-1, Information Sources and Survey Methodology, and page IV.D-11, Special-Status Plant and Animal Species, the general and focused surveys for plants and animals conducted by the Project applicant's biological consultants (see Table IV.D-1 on page IV.D-12) were used in part in assessing the potential for occurrence of species on the Project site and evaluating Project impacts to these species. Prior to the use of information from these surveys in the Draft EIR, the methods and results of the surveys were peer reviewed by the EIR consultant's staff biologists for their adequacy, completeness, and accuracy. In addition, the EIR consultant's staff biologists reviewed other available background information pertaining to plant and animal species known to or having the potential to occur in the Project vicinity, and conducted a reconnaissance-level survey to verify the existing information on vegetation communities and associated wildlife habitats, and habitat use on and surrounding the Project site (see pages IV.D-1 and IV.D-11). The results of this background review and reconnaissance-level survey were used in conjunction with the survey results documented in the biological resources reports prepared by the Project applicant's biological consultants.

The use of the available information sources identified above, as well as the EIR consultant's staff biologists' professional judgment, allowed for the potential occurrence of special-status plant and animal species on the Project site to be adequately assessed and potential impacts to these species resulting from development of the proposed Project to be thoroughly evaluated in the Draft EIR. The Draft EIR identifies all potentially present special-status species (see Tables BIO-1 and BIO-2 in Appendix BIO) and evaluates impacts to those species with the greatest potential for occurrence on the site (see page IV.D-12 for special-status plants and page IV.D-16 for special-status animals [page IV.D-16 for amphibians, reptiles, and fish; page IV.D-21 for birds; and page IV.D-23 for mammals]).

Master Response BIO-2: Animals Included from Special-Status Species Analysis

[Responds to Comments F-40, F.E-5, F.E-6, F.E-7, F.E-8, F.E-9, F.E-10, F.E-11, F.E-12, F.E-13, F.E-14, F.E-15, F.E-16, F.E-17, F.E-18, F.E-19, F.E-20, F.E-25, F.E-26, F.E-27, F.E-28, F.E-29, F.E-30, F.E-31, F.E-32, F.E-33, F.E-34, F.E-35, F.E-36, F.E-37, F.E-38, F.E-39, and F.E-44]

The above-referenced comments were submitted in response to the NOP and are not new comments on the Draft EIR. The comments do not take into account the discussion and analysis contained in the Draft EIR. The purpose of this response is to explain that the re-submission of these comments does not identify any issues that were not thoroughly analyzed in the Draft EIR.

The Draft EIR, Section IV.D, Biological Resources, incorporated information as applicable from the biological resources reports prepared by the Project applicant's biological consultants for the proposed Project. A number of comments expressed concern that several special-status species known to or having the potential to occur in the Project vicinity were not included in these reports, resulting in an incomplete or inadequate special-status species analysis. In addition, some comments expressed opinions regarding the evaluation of the potential for occurrence of species on the Project site. This master response addresses these concerns and opinions.

The Draft EIR does not rely solely on information provided by the Project applicant's biological consultants. As discussed in Master Response BIO-1, a number of available information sources were used in identifying specials-status species with the potential to occur on the Project site. Tables BIO-1 and BIO-2 in Appendix BIO of the Draft EIR present those special-status plant and animal species, respectively, that were evaluated. Table BIO-2 included the following 15 bird species that were documented in the above-referenced comments as not being considered in the Project applicant's biological resources reports:

- Great Egret (*Ardea alba*)
- Allen's Hummingbird (*Selasphorus sasin*)
- Snowy Egret (*Egretta thula*)
- Olive-sided Flycatcher (*Contopus cooperi*)
- Ferruginous Hawk (*Buteo regalis*)
- Oak Titmouse (*Baeolophus inornatus*)
- Merlin (*Falco columbarius*)
- Hermit Warbler (*Setophaga occidentalis*)
- Osprey (*Pandion haliaetus*)
- Yellow Warbler (*Setophaga petechia*)
- Northern Harrier (*Circus cyaneus*)
- Vaux's Swift (*Chaetura vauxi*)
- Grasshopper Sparrow (*Ammodramus savannarum*)
- Nuttall's Woodpecker (*Picoides nuttallii*)
- Bell's Sage Sparrow (*Amphispiza belli belli*)

Other bird species addressed in the text of the Draft EIR (see page IV.D-22, third full paragraph, third sentence), but which commenters assert were not being considered, include those that are protected under the federal Migratory Bird Treaty Act, such as California Thrasher (*Toxostoma redivivum*) and Wrentit (*Chamaea fasciata*).

In addition to bird species, Townsend's big-eared bat (*Corynhinus townsendii*), which commenters also stated was not being considered in the Project applicant's biological resources reports, is discussed in the Draft EIR (see Table BIO-2 in Appendix BIO).

With regard to the opinions expressed by commenters about the potential for occurrence of the special-status bird species listed below, these opinions were taken into consideration in the preparation of Draft EIR (see Table BIO-2 in Appendix BIO and page IV.D-22, third full paragraph) and, therefore, no additional response is necessary.

- Cooper's Hawk (*Accipiter cooperii*)
- Purple Martin (*Progne subis*)
- Sharp-shinned Hawk (*Accipiter striatus*)
- Tricolored Blackbird (*Agelaius tricolor*)
- Black Swift (*Cypseloides niger*)
- White-tailed Kite (*Elanus leucurus*)
- Loggerhead Shrike (*Lanius ludovicianus*)
- Yellow-breasted Chat (*Icteria virens*)
- Barn Owl (*Tyto alba*)
- American Peregrine Falcon (*Falco peregrinus anatum*)
- Golden Eagle (*Aquila chrysaetos*)
- Great Blue Heron (*Ardea herodias*)
- Prairie Falcon (*Falco mexicanus*)
- Long-eared Owl (*Asio otus*)

Master Response BIO-3: Adequacy of Special-Status Bird Analysis

[Responds to Comments E-34, E-38, E-44, F-37, F-38, F-39, F-40, F-65, F.E-1, F.E-2, F.E-4, F.E-5, F.E-41, F.E-46, F.E-48, F.E-49, H-7 and PC-3]

Comments on the Draft EIR that addressed the adequacy of the special-status bird analysis included Comments E-34, E-44, H-7 and PC-3; all other comments referenced above were previously made in response to the NOP. Comments stated that the analysis is inadequate for reasons related to the survey methods and results, in particular the time of day and/or season and the extent of the survey area, documented in the biological resources reports prepared by the Project applicant's biological consultants for the proposed Project and incorporated into the Draft EIR, and that additional surveys are necessary to provide a complete inventory of the bird species present on the Project site. Also, some comments stated that the prescribed mitigation for impacts to birds resulting from development of the proposed Project is inadequate, since they rely on implementing the results of a later survey that would define the mitigation measures. This master response addresses these concerns. Please refer to Master Response BIO-4 for responses specific to comments regarding the adequacy of the northern spotted owl analysis.

As generally discussed in Master Response BIO-1, bird surveys conducted by the Project applicant's biological consultants were used in part in assessing the potential for occurrence of bird species on the Project site and evaluating impacts to these species resulting from development of the proposed Project. Prior to the use of information from these surveys in the Draft EIR, the methods and results were peer reviewed by the EIR consultant's staff biologists for their adequacy, completeness, and accuracy. The EIR consultant's biologists then developed a list of all special-status bird species that are known to or have the potential to occur in the Project vicinity (see Draft EIR Table BIO-2, Birds, Appendix BIO). This list was derived from a review of available information sources (see Draft EIR page IV.D-11, Special-Status Plant and Animal Species). The potential for occurrence of those bird species included on the list were then evaluated based on the habitat requirements of each species relative to the conditions observed during a reconnaissance-level field survey by the EIR consultant's staff biologists and their professional judgment, as well as results of the bird surveys conducted by the Project applicant's biological consultants.

The approach described above allowed for the potential occurrence of special-status bird species on the Project site to be adequately assessed and potential impacts to these species resulting from development of the proposed Project to be thoroughly evaluated in the Draft EIR. Additional bird surveys are therefore not necessary at this time and, furthermore, would not be appropriate for the purposes of the analysis presented in the Draft EIR. Typically, bird surveys are not considered valid by the regulatory and resources agencies beyond the year in which the surveys were completed, with nesting surveys not considered valid beyond 30 days from the last survey date.[13]

[13] For certain bird species, once detected on a site, surveys results may remain valid for more than a year.

Mitigation Measure D.8 on page IV.D-46 of the Draft EIR outlines the pre-construction survey for special-status birds. This measure is feasible, provides a clear commitment, and specifies performance standards which would mitigate the potentially significant effect of the proposed Project to less than significant. This measure addresses potentially changing conditions, and ensures that any special status bird species present at the Project site at the time of construction are detected and protected. Furthermore, this measure is typically used and generally accepted by the regulatory and resources agencies to avoid, minimize, or reduce the significance of impacts to special-status birds.

Master Response BIO-4: Adequacy of Northern Spotted Owl Analysis

[Responds to Comments E-38, E-39, E-40, F-44, F-45, F-46, F-46A, F-47, F.E-5, F.E-21, F.E-22, F.E-23, F.E-24, F.E-42, F.E-43, F.E-51 and F.E.-52]

Comments on the Draft EIR that address the adequacy of the northern spotted owl (*Strix occidentalis caurina,* NSO) analysis included Comments E-39 and E-40; all other comments referenced above were previously made in response to the NOP. These comments express concern regarding the use of the NSO analysis contained in the biological resources reports prepared by the Project applicant's biological consultants for the proposed Project. Some of the comments stated that the surveys conducted by the Project applicant's biological consultants were not in accordance with the most current protocol issued by the U.S. Fish and Wildlife Service (USFWS) and, therefore, additional surveys are necessary in order to provide sufficient information about NSO presence in the Project vicinity. Other comments stated that the analysis of potential impacts to NSO resulting from development of the proposed Project is inadequate, as the extent of the survey area was not sufficient to provide adequate coverage of NSOs that could be impacted by the proposed Project, and the most recent guidelines issued by the USFWS for assessing noise and visual disturbance to NSOs were not used. Additional comments indicated that the presence of dusky-footed woodrat (*Neotoma fuscipes*) and barred owl (*Strix varia*) in the Project vicinity need to be evaluated, as well as NSO locations during each year of construction. This master response addresses these concerns.

As with all of the analysis presented in the biological resources reports prepared by the Project applicant's biological consultants, the analysis for the NSO was peer reviewed by the EIR consultant's staff biologists. The text on page IV.D-23, first full paragraph and fifth full paragraph, summarizes the NSO surveys conducted on the Project site. This includes a brief discussion of the methods and results, as well as the guidance provided by the USFWS that no additional site visits are necessary to complete the protocol-level survey. The two territories within 1.3 miles of the proposed Project are still considered occupied. The EIR consultant's staff biologist confirmed with the USFWS that additional surveys should not be undertaken, in order to avoid and minimize the potential harassment or harm to NSOs. With respect to this communication with USFWS, the text on page IV.D-23, first full paragraph, third sentence, of the Draft EIR has been modified to include reference to this USFWS communication; please see Chapter V, Errata, in this Response to Comments Document for this staff-initiated change.

The NSO surveys conducted on the Project site were conducted in accordance with the guidance provided by the USFWS and, therefore, are adequate in the professional judgment of the EIR consultant's staff biologists for the purpose of the impact analysis in the EIR. The USFWS did not raise concerns regarding the completeness or adequacy of the NSO surveys used in the Draft EIR or the need for additional surveys prior to each year of construction. In addition, the preconstruction surveys prescribed in Mitigation Measure D.8(b), on page IV.D-46 of the Draft EIR would provide sufficient mitigation to avoid an impact to NSO, if a pair of owls were to move from their known territory to within the harassment distance prior to Project construction.

With regard to the analysis of potential impacts to NSO resulting from development of the proposed Project, the Draft EIR used the most recent guidelines issued by the USFWS for assessing disturbance to NSOs (see Impact D.7). This resulted in an estimated harassment distance (or buffer zone) of 50 meters (165 feet) and 40 meters (132 feet) for noise and visual disturbances, respectively. These distances are consistent with the buffer zones provided in Table 1 of the recent guidelines issued by the USFWS for assessing disturbance to NSOs and are appropriate for the Project, based on characterization of the existing noise levels in the Project vicinity, and the anticipated Project-generated noise levels.

The Draft EIR used these buffer zones to evaluate disturbance impacts to NSO from the proposed Project and, as stated in Impact D.7, the two known territories are well outside of these distances (one located approximately 1,900 feet from the proposed winery development site [NSO territory #1] and the other located approximately 4,200 feet [NSO territory #2]) (see Figure IV.D-7). The Project site would not have a direct line of sight to the occupied territories. For these reasons, the proposed Project is not anticipated to cause a significant disturbance of NSO. In addition, the proposed hours of operation during the construction period would typically occur between 8:00 a.m. to 5:00 p.m. Similarly, the typical hours of operation of the proposed winery would be between 8:00 a.m. to 5:00 p.m. This time period is outside of the peak activity time for NSO (Courtney et al., 2004), particularly during the nesting season when the risk of harassment is higher. This would further ensure the effect of these activities on NSO would remain less than significant. The Draft EIR also used appropriate buffer zones or study areas around the Project footprint to evaluate potential impacts to foraging habitat for the NSO (see page IV.D-44, last full paragraph). The buffer zones or study areas are adequate in the opinion of the EIR consultant's staff biologists, and were determined based on the most recent guidance issued by the USFWS for assessing impacts from projects involving modifications to suitable habitat.

Finally, although information on the extent of dusky-footed woodrat and barred owl presence in the Project vicinity may be helpful in assessing the likelihood for NSO to use habitats within the proposed winery development area, the Draft EIR adequately assesses the potential for occurrence of NSO on the Project site and thoroughly evaluates potential impacts to NSO resulting from development of the proposed Project based on the review of available background information pertaining to NSOs and the EIR consultant's staff biologists professional judgment, as well as results of the NSO surveys conducted by the Project applicant's biological consultant. It should be noted that NSO were detected in the Project vicinity during the protocol-level surveys for NSO and California red-legged frog (*Rana draytonii*) (see page IV.D-23 of the Draft EIR), which itself suggests that barred owls are not present. In the past decade, it has been documented that NSO exhibit reduced response rates during surveys when barred owls reside nearby (Courtney et al., 2004).

References

Courtney, S.P., J.A. Blakesley, R.E. Bigley, M.L. Cody, J.P. Dumbacher, R.C. Fleischer, A.B., Franklin, J.F. Franklin, R.J. Gutierrez, J.M. Marzluff, and L. Sztukowski, 2004. *Scientific Evaluation of the Status of the Northern Spotted Owl.* Sustainable Ecosystems Institute. Portland, Oregon. September 2004.

Master Response BIO-5: Adequacy of Special-Status Bat Analysis

[Responds to Comments E-34, E-38, E-41, E-44, F-37, F-65, F.E-5, F.E-40, F.E-41 and F.E-47]

Comments on the Draft EIR that address the adequacy of the special-status bat analysis included Comments E-41 and E-44; all other comments referenced above were previously made in response to the NOP. A number of comments state that the EIR analysis is inadequate because comprehensive bat surveys were not conducted and prescribed mitigation measures rely on implementing the results of a later survey that would define the mitigation measures. This master response addresses these concerns.

Based on the review of available background information pertaining to bat species known to or having the potential to occur in the Project vicinity (see Draft EIR page IV.D-1, Information Sources and Survey Methodology, and page IV.D-11, Special-Status Plant and Animal Species) and the professional judgment of the EIR consultant's staff biologists, the Draft EIR adequately assesses the potential occurrence of special-status bat species on the Project site, identifying all bat species that are known to or have the potential to occur in the Project vicinity and assessing the potential for occurrence of each of these species on the site (see Table BIO-2, Bats, in Appendix BIO), and thoroughly evaluates potential impacts to those species with the greatest potential for occurrence on the proposed winery development site (see page IV.D-23, Mammals, Bats). The potential for occurrence of those special-status bat species identified in the Project vicinity was evaluated based on the habitat requirements of each species relative to the conditions observed during a reconnaissance-level field survey by the EIR consultant's staff biologists and their professional judgment, as well as results of the habitat assessments and surveys conducted by the Project applicant's biological consultants. Comprehensive surveys for bats are therefore not necessary to evaluate potential impacts of the Project and to identify appropriate and adequate mitigation measures. More importantly, comprehensive surveys for bats would not be appropriate for the purposes of the analysis presented in the Draft EIR. The proposed winery development site is known to support habitat features (e.g., tree roosting sites) that could be used by tree roosting bats, which commonly move between a number of roost sites and may not re-use the same roost within or between years (Barclay and Brigham, 2001). For these reasons, surveys to determine occupancy of potentially suitable tree roosts on the proposed winery development site no more than 30 days prior to the onset of construction activities would be most appropriate to avoid and minimize potential impacts to special-status bats.

With regard to the prescribed mitigation, Mitigation Measure D.9 on page IV.D-48 of the Draft EIR outlines the pre-construction survey for special-status bats. This measure is feasible, provides a clear commitment, and specifies performance standards which would mitigate the potentially significant effect of the proposed Project. It is specifically intended to address potentially changing conditions, and to ensure that special-status bats are detected and protected at the time of Project construction. Furthermore, these measures are typically used and generally accepted by the regulatory and resources agencies to avoid, minimize, or reduce the significance of impacts to special-status bats, and as discussed above, are what is appropriate for the species.

References

Barclay, R.M., 2004. *Year-to-year Reuse of Tree-roosts by California Bats (Myotis californica) in Southern British Columbia*. Am. Midl. Nat. 146:80-85.

Master Response BIO-6: Adequacy of Narrow-anthered California Brodiaea Analysis

[Responds to Comments E-35, E-36, E-37, E-44, F-41, F-42, F-43, F.G-1 and F.G-2]

Comments on the Draft EIR that addressed the adequacy of the narrow-anthered California brodiaea (*Brodiaea californica* var. *leptandra*) analysis included Comments E-35, E-36, E-37 and E-44; all other comments referenced above were previously made in response to the NOP. A number of comments state that the analysis is inadequate because there was no discussion of prior collection of brodiaea "seeds" and "corms," and that brodiaea were destroyed on-site, and prescribed mitigation is not effective for replacing the lost population. This master response addresses these concerns.

Narrow-anthered California brodiaea is a California Native Plant Society List 1B.2 species, for which no take permit process exists. Commenters assert that there was improper past collection of narrow-anthered California brodiaea seeds or corms/bulbs within the proposed winery development site by the Project applicant's biological consultant. Certain comments cite references in the applicant's biological consultant's biological resources report[14] that characterize the applicant's previous biological consultant as having removed brodiaea seeds and bulbs on the 245 Wappo Road property in 2010. Other comments state that brodiaea were destroyed on-site.

Some comments imply that the County authorized some component of the Project by authorizing these activities. County staff has not authorized or been involved with any activities associated with potential removal or destruction of brodiaea plants, and has sought to determine what occurred. The applicant's previous biological consultant has stated that only seeds were harvested from the brodiaea plants (no corms/bulbs were removed, and no plants were destroyed), and that the seeds have since been kept refrigerated in a sealed container for storage, as appropriate. Consequently, while the reference in the 2011 biological resources report to seeds being removed from the site in 2010 is accurate, the reference to bulbs being removed from the site in 2010 is in error. It should be noted that these activities would have occurred prior to the Notice of Preparation and the analytical work for this Draft EIR. In any case, these activities have no impact on the environmental analysis or conclusions in the Draft EIR, and the mitigation required does not rely on these activities.

The mitigation outlined in the Draft EIR takes into account the risks of salvaging and transferring narrow-anthered California brodiaea. Mitigation Measure D.1a on page IV.D-36 outlines the process for developing a scientifically sound mitigation plan to provide the basis for offsetting any uncertainty regarding transplantation and ensuring the likelihood of long-term persistence of the translocated population. This measure also provides a clear commitment, as initiation of Project construction is contingent upon implementation of the mitigation plan to the satisfaction of both the California Department of Fish and Game and the County of Sonoma, and specifies performance standards which would mitigate the significant effect of the proposed Project.

14 Ted Winfield and Associates, et. al, *Biological Resources Report for the Cornell Winery Project*, September 2011, pages 51 and 92.

Master Response CUM-1: Consideration of Cumulative Impacts

[Responds primarily to Comment E-30; and also Comments B-9, E-43, F-1, F-50 and F-51]

Comment E-30 asserts that the Draft EIR inadequately characterizes potential future developments in the vicinity of the Project site in the cumulative analysis, and states that the EIR must, "address any and all reasonably foreseeable future developments" and that the Draft EIR is flawed, because, the commenter asserts, it does not include either a list of cumulative projects or a summary of projections upon which the cumulative analysis is based.

The commenter's claims of inadequacy are unfounded. The Draft EIR (discussion of Impact C.6, pages IV.C-34 to IV.C-35) lists the cumulative projects included in the analysis of potential cumulative effects. These include rural residential development located along St. Helena Road and Mark West Creek, and nearby agricultural uses, including a Christmas tree farm and vineyards. Nearby vineyards listed in the Draft EIR include Pride Mountain Vineyard, the Constant-Diamond Mountain Vineyard, the St. Helena Road Vineyard and Winery, and the Fisher Vineyards. The Draft EIR concludes that these developments and land use changes, which have occurred over the past several decades, have had a cumulative adverse effect on streamflow (Impact C.6) and aquatic biological resources (Impact D.12). The Draft EIR acknowledges that the State Water Resources Control Board (SWRCB) has designated Upper Mark West Creek upstream of U.S. Highway 101 as a fully appropriated stream during the months of May through October, and reviews the findings and conclusions of a recent scholarly article (Grantham et al, 2012) that relates land use development in the Russian River basin to diminishing streamflow and declining fish populations in Russian River tributary streams. In short, the Draft EIR takes a broad view of cumulative projects in discussing the degraded condition of Upper Mark West Creek. The Draft EIR goes further in postulating that, even in the absence of current proposals, there are likely to be future developments, or proposals for developments, that could contribute to ongoing cumulative impacts. Therefore, the Draft EIR completely and appropriately fulfills the CEQA requirement to disclose and analyze the cumulative setting, and the current and predictable future cumulative effects on the environment. As described in the response to Comment E-29, the determination of significance for a cumulative impact is a two-step process. The first step is to determine whether a cumulative impact exists in the Project vicinity. This was found to be the case, as described above. This in itself does not constitute a significant impact of the Project, but rather sets the stage for the second step, which is to determine whether the Project would make a cumulatively considerable contribution to this impact. As discussed under Impacts C.6 and D.12, and as summarized in the response to Comment E-29, the Draft EIR determines that the Project would not make a cumulatively considerable contribution to the cumulative impact on streamflow and aquatic resources that already exists in the Upper Mark West watershed.

The cumulative impact discussion in the Draft EIR adequately meets the requirements of CEQA. To further characterize the cumulative environment in the Project vicinity, staff collected information on current and recent permit applications in the Upper Mark Creek Watershed. Sonoma County PRMD tracks all planning permit applications within each of the County's nine

Planning Areas. The Project site, and the entire Upper Mark West Watershed, are within Planning Area 5: Santa Rosa and Environs. **Table CUM-1** shows all planning permit applications received from 2005-2012 for properties within the Upper Mark West Watershed (the area shown in the Draft EIR in Figure IV.C-1). The table includes a brief description of the proposed activity and the current (as of November 2012) status. The table also indicates the sub-watershed that the subject parcels lie within; the Project site is located within the Van Buren Creek sub-watershed (see Figure IV.C-1 in the Draft EIR).

TABLE CUM-1
DEVELOPMENT PERMIT APPLICATIONS IN THE UPPER MARK WEST WATERSHED: 2005-2012

File #	Year Filed	Address	Sub-Watershed	Activity	Status
ZPE05-0412	2005	5170 Wikiup Bridge Way	Mark West Springs	Zoning permit for a new detached second dwelling unit with attached garage	Approved
LLA05-0029	2005	3815 Porter Creek Rd	Porter Creek	Lot line adjustment between two parcels	Approved
LLA05-0094	2005	3625 Franz Valley Rd	Mark West Springs	Lot line adjustment between four parcels	Expired
ADR05-0033	2005	2520 Mark West Springs Rd	Mark West Springs	Administrative design review for a replacement fence along the front yard setback	Approved
CMO05-0005	2005	5571 Crystal Dr	Mark West Springs	Certificate of modification to relocate a drainage easement	Approved
LLA05-0050	2005	3545 Oakhaven Ct	Mark West Springs	Lot line adjustment between two parcels	Expired
LLA05-0070	2005	1400 Riebli Rd	Mark West Springs	Lot line adjustment between three parcels	Approved
ADR05-0023	2005	5008 Gates Rd	Humbug Creek	Administrative design review for a garage within the scenic corridor setback	Approved
MNS05-0023	2005	6645 Erland Rd	Van Buren Creek*	Minor subdivision creating four parcels. Rescinds the prior (plp96-0026).	Approved
MNS06-0006	2006	3815 Porter Creek Rd	Porter Creek	Minor subdivision creating four parcels	Approved
ZPE06-0021	2006	1000 Shiloh Crest	Mark West Springs	Zoning permit for a second dwelling unit with detached garage	Approved
ZPE06-0026	2006	124 Meadowcroft Way	Mark West Springs	Zoning permit for a second dwelling unit attached to a single family residence	Approved
LLA06-0050	2006	7347 Shiloh Rdg	Mark West Springs	Lot line adjustment between three parcels	Expired
ZPE06-0051	2006	6567 St Helena Rd	Van Buren Creek*	Second unit zoning permit	Approved
ADR06-0025	2006	7223 St Helena Rd	Van Buren Creek*	Administrative design review of a new detached garage in the scenic corridor	Approved
PLP06-0017	2006	6200 Gates Rd	Humbug Creek	Request for twelve administrative certificates of compliance to recognize historic parcels.	Approved
PLP06-0028	2006	3178 Calistoga Rd	Humbug Creek	Two administrative certificates of compliance to recognize historic parcels	Approved
PLP06-0053	2006	5000 Alpine Rd	Humbug Creek	Six administrative certificats of compliance to recognize historic parcels	Approved

TABLE CUM-1 (Continued)
DEVELOPMENT PERMIT APPLICATIONS IN THE UPPER MARK WEST WATERSHED: 2005-2012

File #	Year Filed	Address	Sub-Watershed	Activity	Status
PLP06-0075	2006	2230 Calistoga Rd	Van Buren Creek*	Administrative design review for a new primary single family dwelling and a zoning permit for a new detached second dwelling unit	Withdrawn
PLP07-0065	2007	5391 Blue Ridge Trl	Mark West Springs	Administrative design review for height increase and use permit for fence	Approved
LLA07-0064	2007	5400 Foothill Ranch Rd	Mark West Springs	Lot line adjustment between two parcels	Approved
ZPE07-0340	2007	6200 Via Porto Azzurro	Mark West Springs	Zoning permit for a detached second dwelling unit attached to garage/storage serving the future primary dwelling	Approved
MNS07-0009	2007	1025 Quietwater	Mark West Springs	Minor subdivision creating 2 parcels and a remainder	Approved
ZPE07-0122	2007	5775 Via Porta Azzurro	Mark West Springs	Zoning permit for an affordable second dwelling unit with an attached garage	Approved
CMO07-0008	2007	140 Meadowcroft Way	Mark West Springs	Certificate of modification to expand the building envelope and relocate the leach field area of lot 6 of tract no. 926.	Approved
ZPE07-0135	2007	7200 St Helena Rd	Van Buren Creek*	Zoning permit to place rip-rap along Mark West Creek to repair eroded bank	Expired
LLA07-0040	2007	8576 St Helena Rd	Van Buren Creek*	Lot line adjustment between two parcels	Approved
UPE07-0135	2007	9955 St Helena Rd	Van Buren Creek*	Use permit for a new 6' wood privacy fence located within the front yard setback	Approved
PLP07-0099	2007	6577 St Helena Rd	Van Buren Creek*	Two administrative certificates of compliance to recognize historic parcels	Approved
PLP07-0098	2007	6585 St Helena Rd	Van Buren Creek*	Three administrative certificates of compliance to recognize historic parcels	Approved
UPE07-0008	2007	245 Wappo Rd	Van Buren Creek*	Cornell Winery	EIR In Process
CMO07-0015	2007	2091 Mark West Springs Rd	Mark West Springs	Certificate of modification to relocate a designated building envelope. A resubmittal of a certificate of modification that never recorded as part of the previously approved file# plp04-0082.	Approved
ZPE07-0045	2007	7383 Shiloh Rdg	Mark West Springs	Zoning permit for a detached second dwelling unit	Approved
ZPE07-0205	2007	7311 Shiloh Rdg	Mark West Springs	Zoning permit for a detached second dwelling unit	Approved
PLP07-0048	2007	950 Quietwater	Mark West Springs	Minor lot line adjustment between three parcels and a minor subdivision of one of the resulting parcels into two parcels	Approved
LLA08-0004	2008	1758 Riebli Rd	Mark West Springs	Lot line adjustment between two parcels	Expired

TABLE CUM-1 (Continued)
DEVELOPMENT PERMIT APPLICATIONS IN THE UPPER MARK WEST WATERSHED: 2005-2012

File #	Year Filed	Address	Sub-Watershed	Activity	Status
LLA08-0020	2008	6577 St Helena Rd	Van Buren Creek*	Minor lot line adjustment between three parcels. Two of the three subject parcels under Williamson Act contracts	Approved
MNS08-0018	2008	6160 Erland Rd	Van Buren Creek*	Minor subdivision creating two parcels	Approved
LLA08-0054	2008	1774 Los Alamos Rd	Van Buren Creek*	Lot line adjustment between two parcels	Approved
LLA08-0029	2008	815 Quietwater	Mark West Springs	Lot line adjustment between two parcels	Approved
PLP08-0093	2008	998 Quietwater Rdg	Mark West Springs	A minor lot line adjustment between two parcels followed by a minor subdivision of one of the resulting parcels into two lots	Approved
PLP09-0025	2009	5309 Foothill Ranch Rd	Mark West Springs	Zoning permit for a new second dwelling unit and a minor use permit to reduce the required setbacks to nearest property line	Approved
CMO09-0002	2009	5689 Wild View Way	Humbug Creek	Certificate of modification to expand the building envelope on an existing lot to allow for construction of a pool and a second dwelling unit	Approved
PLP09-0028	2009	1990 Mark West Springs Rd	Mark West Springs	Minor lot line adjustment between two parcels and a certificate of modification to remove a greenbelt area and alter a building envelope to match proposed parcel boundary on lot 1 of parcel map 94-629 (bk 543 pg 13)	Approved
PLP09-0035	2009	4411 Porter Creek Rd	Porter Creek	Use permit for a mining and reclamation plan to expand Mark West Quarry and a zone change to add the MR (Mineral Resource) combining district to the current zoning district.	EIR In Process
ZPE09-0214	2009	1932 Los Alamos Rd	Van Buren Creek*	Zoning permit to convert an existing guest house to a second dwelling unit	Approved
AGP09-0002	2009	5000 Alpine Rd	Humbug Creek	Agricultural preserve modification	Incomplete Application
LLA09-0014	2009	6055 St Helena Rd	Van Buren Creek*	Lot line adjustment between two existing parcels	Approved
PLP09-0046	2009	6577 St Helena Rd	Van Buren Creek*	(Same as LLA10-0008). This is a rezone and general plan amendment that were required by approval of LLA08-0020.	Approved
PLP09-0045	2009	6577 St Helena Rd	Van Buren Creek*	(Same as LLA10-0008). This is a rezone and general plan amendment that were required by approval of LLA08-0020.	Approved

TABLE CUM-1 (Continued)
DEVELOPMENT PERMIT APPLICATIONS IN THE UPPER MARK WEST WATERSHED: 2005-2012

File #	Year Filed	Address	Sub-Watershed	Activity	Status
UPE09-0047	2009	5580 Alpine Rd	Humbug Creek	Use permit for a new winery with 800 cases per year production to be located in existing buildings and not open to the public on a 120 acre parcel	Approved
LLA09-0037	2009	5210 Wikiup Bridge Way	Mark West Springs	Lot line adjustment between two parcels	Approved
LLA10-0010	2010	3625 Franz Valley Rd	Porter Creek	A major lot line adjustment between four acc parcels (see plp96-0078) of 40 acres, 80 acres, 86 acres, and 200 acres in size resulting in four parcels of 26.3 acres, 23.3 acres, 200 acres, and 160 acres in size. Pepperwood preserve	Approved
UPE10-0026	2010	4088 Porter Creek Rd	Porter Creek	Use permit for a master plan for an existing camp and retreat center to allow for remodeling of the existing facility on 458 acres.	Approved
ZPE10-0088	2010	5213 Sharp Rd	Porter Creek	Request for a zoning permit to designate an existing 835 sq ft residence as a second dwelling unit on a 15.32 acre parcel	Approved
ADR10-0027	2010	4790 Petrified Forest Rd	Porter Creek	Administrative Design Review for a new single family residence and garage	Approved
PLP10-0031	2010	2621 Porter Creek Rd	Porter Creek	Five administrative certificates of compliance to recognize historic parcels on 380.3 acres.	Approved
PLP10-0058	2010	1491 Michele Way	Mark West Springs	Three administrative certificates of compliance to recognize historic parcels on 3.4 acres.	Approved
ADR10-0060	2010	3115 Porter Creek Rd	Porter Creek	Administrative design review for the conversion of an existing agricultural barn into a garage and workshop within the SR (Scenic Resources) zoning district	Approved
ADR10-0061	2010	3115 Porter Creek Rd	Porter Creek	Administrative design review to add a covered walkway and porch to an existing sfd within the SR (Scenic Resources) zoning district	Approved
LLA10-0008	2010	6577 St Helena Rd	Van Buren Creek*	Lot line adjustment in connection with a Williamson Act contract	Approved
ZPE10-0122	2010	7955 St Helena Rd	Van Buren Creek*	Zoning Permit to allow conversion of existing residence into an Agricultural Employee Unit to support 3-acres of field grown crops. This would enable a new primary dwelling.	Approved

TABLE CUM-1 (Continued)
DEVELOPMENT PERMIT APPLICATIONS IN THE UPPER MARK WEST WATERSHED: 2005-2012

File #	Year Filed	Address	Sub-Watershed	Activity	Status
UPE10-0077	2010	2179 Calistoga Rd	Van Buren Creek*	Minor use permit to co-locate eight panel antennas to an existing 200-foot lattice tower	Approved
UPE10-0081	2010	6997 St Helena Rd	Van Buren Creek*	Revision to an existing use permit (UPE01-0176) to allow for grape and juice importation to an existing winery with no increase in previously permitted production levels on a 60 acre parcel	Withdrawn
LLA10-0007	2010	850 Shiloh Glen	Mark West Springs	Lot line adjustment between two parcels	Approved
UPE11-0021	2011	11444 Vineyard Springs Ln	Porter Creek	Revision to a use permit to install additional antennas on an existing telecommunications tower along with associated equipment cabinets on a portion of 22.2 acre parcel.	Approved
MNS09-0015	2011	1515 Lorraine Way	Mark West Springs	Revision to an approved minor subdivision which would create two lots of 5.29 acres and 6.31 acres and a designated remainder of 18.55 acres in size.	Approved
LLA11-0045	2011	7900 St Helena Rd	Van Buren Creek*	Lot line adjustment between two existing parcels, each developed with a house	Approved
UPE12-0019	2012	1840 Riebli Rd	Mark West Springs	Use permit for second unit with reduced property line setbacks	Approved
LLA12-0009	2012	3548 Oakhaven Ct	Mark West Springs	Lot line adjustment between two existing parcels	Approved
CMO12-0004	2012	11444 Vineyards Springs Ln	Porter Creek	Certificate of modification to increase the size of the building envelope to allow for construction of a new second dwelling unit on a 22 acre parcel.	Approved
LLA12-0030	2012	987 Mark West Springs Rd	Mark West Springs	Lot line adjustment between two parcels	Incomplete application

***** The Project site is located within the Van Buren Creek sub-watershed.

SOURCE: Sonoma County PRMD

The list provided in Table CUM-1 indicates that the County has records of 72 planning permit applications in the Upper Mark West Watershed filed from 2005 through October 2012. Many of the applications are for lot line adjustments, use permits for second dwelling units or remodels, administrative design review for remodels, or other relatively minor projects. A few major projects stand out, notably the 2009 application for a revised Mining and Reclamation Plan for a proposed expansion of the existing Mark West Quarry. This project is currently the subject of another EIR.

Permits for vineyard planting or replanting are processed by the County Agricultural Commissioner. As shown in **Table CUM-2**, for the years 2005 through the present, there have been fourteen permit applications for vineyard planting or replanting in the Upper Mark West Watershed, of which three have been in the Van Buren Creek sub-watershed (two of the three are for Cornell Farms). There are no current applications pending for new vineyards.

TABLE CUM-2
VINEYARD PLANTING/REPLANTING PERMITS IN THE UPPER MARK WEST WATERSHED: 2005-2012

Number	Address	New/ Replant	Acres	Status	Subwatershed
ACO12-0001	1889 Riebli Rd	Replant	3	Issued	Mark West Springs
ACO11-0026	420 Wappo Rd	Replant	10	Finaled	Van Buren Creek*
ACO09-0073	1889 Riebli Rd	Replant	2	Issued	Mark West Springs
ACO09-0076	1889 Riebli Rd	New	3.2	Finaled	Mark West Springs
ACO08-0118	4101 Alpine Rd	New	2.37	Finaled	Humbug Creek
ACO07-0017	4102 Alpine Rd	New	5.82	Finaled	Humbug Creek
ACO06-0017	5282 Sharp Rd	New	15	Issued	Mark West Springs
ACO06-0022	9175 St Helena Rd	Replant	2	Issued	Van Buren Creek*
ACO06-0149	801 Shiloh Glen	New	1.5	Finaled	Mark West Springs
ACO05-0001	1825 Riebli Rd	Replant	5.5	Issued	Mark West Springs
ACO05-0039	3550 Calistoga Rd	New	5	Issued	Humbug Creek
ACO05-0041	1940 Redwood Hill Ct	New	2	Issued	Mark West Springs
ACO05-0070	2220 Diamond Mtn Rd	New	3	Issued	Porter Creek
ACO05-0117	420 Wappo Rd	New	2.67	Finaled	Van Buren Creek*

***** The Project site is located within the Van Buren Creek sub-watershed.

NOTE: issued" indicates that the permit has been issued; "finaled" indicates that an inspection has confirmed that the conditions of the vineyard permit have been met.

SOURCE: Sonoma County Agricultural Commissioner's Office

Table CUM-3 shows the existing wineries within the Upper Mark West Watershed for which the County has issued a use permit (note that the list does not include vineyards that lack a winery). The list includes the year that the use permit was approved, the production capacity of the winery, and whether the winery has a tasting room. The table lists eight wineries in the Upper Mark West Watershed, three of which are in the Van Buren Creek sub-watershed: Spring Mountain West Vineyards, Fisher Vineyards and Pride Mountain Vineyards.

Sonoma County recently adopted the Grading, Drainage, & Vineyard & Orchard Site Development Ordinance, the vineyard and orchard site development portion of which is known as VESCO. Growers planting new vineyards or orchards, or replanting existing vineyards or orchards, are required to obtain a VESCO permit, meet standards within the Sonoma County Code, and comply with requirements, including best management practices (BMPs) established in the Agricultural Commissioner's BMP guidelines. A VESCO permit is required prior to starting any vineyard or orchard site development or related work; including preparatory site clearing (including tree removal) and soil disturbance, unless the activity is exempted from permit requirements.

TABLE CUM-3
EXISTING WINERIES WITHIN THE UPPER MARK WEST WATERSHED WITH APPROVED USE PERMIT

Winery Name	Site Address	Year Approved	Production Capacity (cases/year)	Tasting Room?
Garric-Langbehn Winery	5400 Alpine Rd	1986	2,500	No
Moon Star Winery	5580 Alpine Rd	2009	800	No
Spring Mountain West Vineyards*	6999 St Helena Rd	2002	6,000	No
Fisher Vineyards*	6200 St Helena Rd	1979	7,000	No
Pride Mountain Vineyards*	4026 Spring Mountain Rd	1995	23,000	Yes
Hans Fahden Vineyards	4855 Petrified Forest Rd	2000	19,000	Yes
Heller Family Vineyards	5136 Sharp Rd	2006	3,500	No
Constant Diamond Mountain Vineyard	2121 Diamond Mtn Rd	2000	5,000	No

***** Wineries denoted with asterisk are located within the Van Buren Creek sub-watershed.

VESCO was enacted for the purpose of regulating grading, drainage improvement, and vineyard and orchard site development within the unincorporated area of the County, and to establish ministerial standards for those activities that:

- Minimize hazards to life and property;
- Protect against soil loss, and the pollution of watercourses with soil and other pollutants;
- Protect the safety, use, and stability of public rights-of-way and watercourses;
- Protect watercourses from obstruction, and protect life and property from the deleterious effects of flooding;
- Protect against the destruction of human remains and archaeological resources;
- Protect streams, lakes, ponds, and wetlands; and
- Promote water conservation.

Any future vineyard and orchard development in the Project vicinity, including the unincorporated Sonoma County areas throughout the Upper Mark West Watershed, will be subject to the requirements and restrictions of VESCO. These restrictions include mandatory setbacks from streams, creeks, wetlands, lakes, and ponds; requirements that limit storm water discharge to pre-development levels, and; limitations on operations during the rainy season to avoid soil loss and sedimentation. This may be expected both to reduce the rate of vineyard development, and to reduce the contribution of future vineyard development to existing, ongoing cumulative impacts on stream resources.

Other constraints to future development of residences and vineyards in the Project vicinity include small parcel size (many of the vacant parcels in the Project vicinity are less than one acre), steep terrain, proximity to creeks, problematic soils, public ownership (the County owns many of the small parcels in the Project vicinity), constraints on developing septic systems, and lack of sufficient water. Although speculative, there may be future applications for permits for development of both

residences and vineyards and wineries in the Upper Mark West Watershed, which will have the potential to contribute to existing, ongoing cumulative impacts on stream resources.

This review of recent and potential future development in the vicinity of the Project site provides additional detail and support for the findings in the cumulative discussions in the Draft EIR (in the discussion of Impacts C.6 and D.12): the Upper Mark West watershed has undergone extensive land use changes that have cumulatively degraded water quality and aquatic habitat, and future, as yet unknown, development, if approved, would have the potential to contribute to these changes. This information in no way changes the conclusions reached in the Draft EIR, that the Project would not make a cumulatively considerable contribution to this existing and ongoing cumulative impact.

CHAPTER III
Agencies and Persons Commenting on the Draft EIR

A. Agencies and Persons Commenting in Writing

The following agencies, organizations and individuals submitted written comments on the Draft EIR during the public review period.

Letter	Person/Agency and Signatory	Date
A	State of California Governor's Office of Planning and Research, State Clearinghouse and Planning Unit (Scott Morgan, Director, State Clearinghouse)	September 24, 2012
B.	National Oceanic and Atmospheric Administration, National Marine Fisheries Service (Dick Butler, North Central Coast Office Supervisor, Protected Resources Division)	September 18, 2012
C.	Gayle Sweigert and James McLean	September 24, 2012
D.	Susan M. Smith	September 22, 2012
E.	Law Offices of Stephan C. Volker - *Draft EIR Comments of New-Old Ways Wholistically Emerging* (Stephan C. Volker, Attorney), with Exhibits and Attachments	September 24, 2012
F.	Law Offices of Stephan C. Volker - *EIR Scoping Comments of New-Old Ways Wholistically Emerging* (Stephan C. Volker, Attorney), with Exhibits[15]	March 28, 2012
G.	Kimberly Burr, Attorney at Law, with Attachments	September 24, 2012
H.	Laura Waldbaum	September 6, 2012

[15] Note: Letter F was included as Attachment 8 to Letter E.

B. Persons Commenting at the Public Hearing

A public hearing on the Draft EIR was held by the County Board of Zoning Adjustments on September 6, 2012. The following individuals provided spoken comments on the Draft EIR:

- Kimberly Burr
- Laura Waldbaum
- Griffin Okie
- Jim Doerkson
- Commissioner Dick Fogg
- Commissioner Pam Davis
- Commissioner Komron Shahhosseini
- Commissioner Shawn Montoya
- Commission Chair Jason Liles

CHAPTER IV
Written and Spoken Comments on the Draft EIR and Responses to Comments

This chapter contains copies of the comment letters during the public review period on the Draft EIR, and the individual responses to those comments. Each written comment letter is designated with a letter (A through H) in the upper right-hand corner of the letter. Spoken comments on the Draft EIR are also included in the Combined Planning Commission and Board of Zoning Adjustment Meeting Minutes from the September 6, 2012 public hearing.

Within each written comment letter, individual comments are labeled with a number in the margin. Immediately following each comment letter is an individual response to each numbered comment. Where responses have resulted in changes to the Draft EIR, these changes also appear in Chapter V of this Response to Comments Document.

Comment Letter A

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

September 24, 2012

Dave Hardy
Sonoma County Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Subject: Henry Cornell Winery, UPE07-0008
SCH#: 2008102040

Dear Dave Hardy:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. The review period closed on September 21, 2012, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

A-1

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Letter A. State of California Governor's Office of Planning and Research, State Clearinghouse and Planning Unit (Scott Morgan, Director)

A-1 The comment regarding compliance with the State Clearinghouse review requirements for draft environmental documents pursuant to the California Environmental Quality Act is acknowledged.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-4731

September 18, 2012

In response, refer to:
150502SWR2011SR00493

David Hardy
Sonoma County Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, California 95403

Dear Mr. Hardy:

This letter transmits initial comments from NOAA's National Marine Fisheries Service (NMFS) to the Sonoma County Permit and Resource Management Department (County) regarding their August 2012 Draft Environmental Impact Report (DEIR) for the proposed Cornell Winery at 245 Wappo Road, Santa Rosa, California (Project). The proposed winery is located near the upper mainstem of Mark West Creek (MWC) and North Fork MWC, streams containing Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) and CCC coho salmon (*O. kisutch*), and CCC coho salmon critical habitat, as listed under the federal Endangered Species Act (ESA) of 1973, as amended. NMFS offers the following comments to help the County refine and improve the analysis and information presented within the DEIR. B-1

Page III-9: The Project described in the DEIR differs from that which was most recently brought to Sonoma County for permitting as a Mitigated Negative Declaration (MND). Specifically, the Project has dropped the mitigation measure that would have relinquished the water right at the 100 Wappo Road and precluded future development of the property in perpetuity (the measure now appears within Alternative 2b). This measure was identified by the California State Water Board (Water Board) as critical mitigation that, in combination with other hydrologic mitigation, led the Water Board to believe the proposed Project was reasonable with respect to winery water use (California Department of Water Resources 2009, 2011). Given the lack of new analysis between the time of the MND and the current DEIR, there should be a more in-depth explanation of why the previously proposed relinquishment of water rights at 100 Wappo Road are no longer necessary to adequately mitigate the Project's hydrologic impacts. B-2

Page IV.C-6: Table IV.C-1provides a summary of area inflow and outflow for several pertinent watersheds in the study area, including the North Fork watershed and South watershed that contain sections of the Cornell property. However, the listing of "Upper Mark West Creek" in the B-3

table is confusing, since there is no explanation of its geographic boundaries. Earlier in the document, a map of the 254 square-mile Mark West Creek watershed is erroneously labeled "Upper Mark West Creek Watershed" (see Figure IV.C-1); the *upper* Mark West Creek watershed is generally considered as the area above the confluence of Weeks Creek, but a formal designation likely does not exist. What is important is that any analyses of hydrologic impacts take place at the relevant scale. Project-related effects (hydrology and sediment) are likely realized primarily within the upper reaches of the Mark West watershed (*e.g.*, above Tar Water Road Bridge), so the use of the entire Mark West Creek watershed for comparative purposes is misleading and does not address potential localized impacts in the upper watershed. B-3 cont.

Page IV.C-7: The water quality monitoring presented within the DEIR fails to evaluate Project impacts at relevant spatial and temporal scales. For instance, water quality sampling site MWC120 is located almost a mile below the Project area, a distance too great to confidently identify water quality effects (*e.g.*, increased turbidity) arising from Project operations. Likewise, the summer and early fall periods are poor times for documenting turbidity effects in stream environments, since higher stream flows (*e.g.*, following a fall freshet or winter storm) are usually necessary to suspend sediment and create turbid conditions. Given the recent (2006) landslide on Cornell property coupled with the low turbidity readings presented in the DEIR, NMFS suspects the testing was not performed during a high-water event, but was instead performed during the summer low-flow period. B-4

Table IV.C-5: It is unclear whether lost groundwater infiltration due to rainwater interception is factored into the analysis of Net Water Usage at Cornell Farms (page IV.4-28). Rainwater harvesting from impervious surfaces (*e.g.,* roof-tops and paved areas) has the potential to diminish groundwater percolation and recharge, which can give rise to an overdraft condition or exacerbate the persistent lowering of groundwater levels where an overdraft situation already exists. Several factors suggest the upper Mark West Creek aquifer is already in an overdraft state, such as anecdotal evidence that summer stream flows have dropped precipitously during the past few decades, greater well depths have recently been required to access groundwater, and that some residents have trucked in water supplies during summer months. B-5

Page IV.C-33: The DEIR states, "*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).*" The manner by which the DEIR portrays the amount of annual stream flow diverted for winery storage (*i.e.,* by rainwater harvesting) as a percentage of overall annual stream flow volume is misleading. The harvesting of rain that would otherwise run into creeks and provide winter stream flow has its greatest effect within the streams directly downstream of the collection site. Characterizing the harvesting effect as the loss of only 140,000 gallons of rainwater from the 93,400 acre-feet of annual flow occurring within the much larger Upper Mark West Creek watershed (undefined in the document, but assumed as the area portrayed on Figure IV.C-1) grossly underestimates the true magnitude of the effect within affected reaches in the North Fork MWC and directly downstream. The DEIR does represent this effect at the more appropriate scale of the North and South Watersheds; however, any effects analysis done at the scale of the Upper Mark West Creek watershed (as portrayed in Figure IV.C-1) should be removed. B-6

Furthermore, the effects analysis noted above considered only *annual* volumes of water instead of shorter, more pertinent time periods. The effect of harvesting rainwater and the resultant near-term loss of overland flow and, by extension, dampening of the stream flow hydrograph, should all be characterized at the most biologically meaningful temporal scale, which is the specific period when harvesting occurs (*i.e.,* during the storm itself). Potential hydrologic and biological impacts will occur at the time of rainwater harvesting; therefore, characterizing the impacts based upon an analysis of annual water volumes lacks meaning and should be removed from the document. B-7

Page IV.C-34, bottom of second paragraph: While discussing cumulative hydrologic and water quality effects from other nearby parcels, the DEIR states…"*water use for these vineyards and wineries is not available".* However, water consumption for a given land-use is often estimated using generally agreed-upon rates and values (*e.g.*, 1/3 acre-foot per planted acre per year; see Erickson Engineering Incorporated 2009). Therefore, the lack of actual irrigation or household water-use data should not stop the County from performing a proper water budget analysis (including groundwater pumping estimates) for the affected area in question, an analysis critical to understanding potential long-term impacts to groundwater and surface stream flow sustainability. B-8

Page IV.C-35, first paragraph: The DEIR points to an August 1, 2012, California State Water Resources Control Board letter that states: "…. *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)."* To put this statement into proper perspective, SWRCB (2012) is the closure of a previous complaint against the diversions of Cornell from the Mark West Creek basin (complaint 49-15-07). In closing the complaint, the letter concludes, "*No new and compelling evidence was presented in response to the ROI* (Report of Investigation) *to show that the diversion…was responsible for the diminished flow in Mark West Creek…"* To conclude that this letter supports the supposition that Cornell is not responsible for lower flows in Mark West Creek is logically false – the fact that no new evidence was submitted demonstrating an effect does not prove an effect does not exist. Actually, no detailed analysis was performed to prove or disprove any potential effect. The CEQA process "*…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* (see page I-1 of DEIR)." In short, the DEIR should not rely on the California State Water Resources Control Boards complaint correspondence as support regarding the cumulative hydrologic effects of a <u>new</u> proposed Project. B-9

In conclusion, the National Marine Fisheries Service appreciates the opportunity to comment on the DEIR for the proposed Cornell Winery on Wappo Road, Sonoma County, California. NMFS recognizes the many mitigation measures adopted for the Project, and commends the applicant for incorporating cutting-edge technology in crop irrigation and rainwater harvesting to help mitigate impacts to the upper Mark West Creek watershed. If you have any comments or concerns regarding this letter, please contact Rick Rogers at 707-578-8552, or rick.rogers@noaa.gov. B-10

Sincerely,

FOR

Dick Butler
North Central Coast Office Supervisor
Protected Resources Division

cc. Chris Bond, SWRCB - Division of Water Rights
Robert L'Heureux, SWRCB - Division of Water Rights

Literature Cited

California Department of Water Resources. 2011. Supplemental Comments on the Proposed Henry Cornell Winery Project. Letter to County of Sonoma County Board of Supervisorsfrom Chris Bond, PE. September 7, 2011. 3 pgs.

California Department of Water Resources. 2009. Henry Cornell Winery Revised Mitigated Negative Declaration (MND) updated comments. Letter to David Hardy, Sonoma County PRMD from Chris Bond, PE. December 21, 2009. 3 pgs.

California State Water Resources Control Board. 2012. Closure of complaint (49-15-07) against the diversions of Cornell from within the Mark West Creek basin in Sonoma County. Letter to Mr. Cornell and Mr. Okie from James W. Kassel. August 1, 2012. 3 pgs.

Erickson Engineering, Inc. 2009. Vineyard Water Availability Analysis: Artesa Annapolis Winery. Prepared for Artesa Vineyards Winery, December 24, 2009.24 pgs.

Letter B. National Oceanic and Atmospheric Administration, National Marine Fisheries Service (Dick Butler, North Central Coast Office Supervisor, Protected Resources Division)

B-1 The commenter states the proposed winery is located near the upper mainstem of Mark West Creek and North Fork Mark West Creek, streams containing Central California Coast steelhead and Central California Coast coho salmon, and Central California Coast coho salmon critical habitat, as listed under the federal Endangered Species Act of 1973, as amended.

A discussion of these special-status species and associated habitat is described in the Draft EIR Biological Resources section setting on pages IV.D-21 to IV.D-21, and Table BIO-2 in Draft EIR Appendix BIO; the applicable regulatory framework for these species is presented in the Draft EIR on pages IV.D-25 to IV.D-34; and the potential Project impacts are addressed in the Draft EIR in Impact D.6 and Impact D.12.

B-2 The commenter requests an explanation as to why the previously-proposed relinquishment of water rights at 100 Wappo Road is no longer proposed.

The Conservation Easement was dropped from the applicant's proposal by the applicant, not by the County. As noted by the commenter, the County has retained and analyzed the proposal as an alternative to the applicant's proposal. The Alternatives section of the Draft EIR includes a Project Alternative that would place a Conservation Easement similar to that previously described for the Project on the Cornell Farms 100 Wappo Road property and/or the adjacent 115 Wappo Road property (Alternative 2B) in addition to the water conservation measures/offsets proposed by the Project. The Draft EIR finds that the Conservation Easement(s) that would occur under this Alternative would provide substantial further environmental benefits on the Cornell Farms and/or adjacent property. The Draft EIR determines that, aside from the No Project Alternative, Alternative 2B – Conservation Easement(s) on Cornell Farms and/or Adjacent Property would be the environmentally superior alternative.

As is discussed under Project History, on page III-8 of the Project Description of the Draft EIR, in 2009, the Project applicant proposed to offset Project winery water use by demolishing the existing residence on the 100 Wappo Road 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. The proposed Conservation Easement was in addition to other water conservation/ offset measures proposed at that time; this included the treatment of winery process water to supplement irrigation of the Cornell Farms vineyards (but did not include any rain water harvesting). In 2010, the Project applicant proposed to further off-

set the Project water use by collecting and storing rainwater in on-site water storage tanks (total of 140,000-gallon capacity) and not pump groundwater for the winery during the months of August through October.

The Conservation Easement alternative (Alternative 2B) would be the environmentally superior alternative, but it is not required to mitigate the hydrological effects of the Project to a level that is less than significant, either in terms of direct or cumulative impacts. As is discussed more fully in Impact C.3 in the Draft EIR, without the inclusion of the previously-proposed Conservation Easement, 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 would result in a net reduction in annual groundwater pumping under Project conditions, and consequently, reduce the annual demand on the aquifer. Furthermore, the proposed winery would limit its proposed pumping of the Project 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. 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 Project impact is less than significant. However, the County's Board of Supervisors has discretion whether to approve an alternative of the Project, including Alternative 2B.

B-3 The commenter indicates the listing of Upper Mark West Creek in Table IV.C-1 is confusing as there is no explanation of its geographic boundaries. The geographic boundary of the Upper Mark West watershed is illustrated in Figure IV.C-1 and described on Page IV.C-1 of the Draft EIR. The commenter incorrectly states that Figure IV.C-1 shows the entire 254-square mile Mark West Creek watershed. Rather, the mapped boundary on Figure IV.C-1 is that of the Upper Mark West watershed as designated by the Sotoyome Resource Conservation District (SCRD) in its 2008 Watershed Management Plan.[16]

The SCRD considers the Upper Mark West watershed the approximately 40-square mile portion east of the cities of Windsor and Santa Rosa, which is part of the larger Mark West Creek watershed. The Draft EIR indicates on page IV.C-1 that the Mark West Creek watershed is 83 square miles, as identified by Sonoma County in its General Plan. The commenter's reference to 254 square miles may be in relation to the larger Laguna de Santa Rosa watershed (also known as the Laguna-Mark West watershed), which drains 254 square miles.

16 Sotoyome Resource Conservation District, Upper Mark West Watershed Management Plan Phase 1: Watershed Characterization and Needs Assessment. August 31, 2008.

The Draft EIR uses the SCRD Upper Mark West watershed boundary and considers it the formal designation. The commenter incorrectly indicates that the Draft EIR only uses the entire Mark West Creek watershed area for comparison purposes to analyze Project effects. The Draft EIR analyzes Project impacts at a local (project site) watershed scale and for regional context, also discusses potential impacts on the larger geographic scale, namely the 40-square mile Upper Mark West watershed (see Impact C.3, page IV.C-24 and Impact C.5, page IV.C-33).

B-4 The commenter states that the water quality monitoring data presented in the Draft EIR (Page IV.C-7) fails to evaluate Project impacts at relevant spatial and temporal scales.

The water quality data provided in the setting of the Draft EIR (page IV.C-7) were available during the preparation of the Draft EIR and represent a relevant snap shot of the water quality at locations in Mark West Creek upstream and downstream of the Project site between 2003 and 2009. As stated in the Draft EIR, the water sampling was conducted by the Community Clean Water Institute (CCWI), a non-profit local citizen's watershed group. Other than the data provided by CCWI, water quality data for Mark West Creek in the Project area is limited. The presentation of the available water quality testing data in the Draft EIR was intended to disclose water quality conditions as part of the Draft EIR's description of the environmental setting. The Draft EIR analyzed the potential for the Project to degrade surface water quality in Impacts C.1, C.2 and C.6, and determined that potential Project water quality impacts and contribution to potential cumulative water quality impacts would be less than significant, and accordingly, that mitigation requiring surface water sampling was not warranted. Please note that CCWI did not collect surface water data to assess effects of the proposed Project or determine the effects of the 2006 landslide on the Cornell Farms property mentioned by the commenter.

B-5 The commenter indicates they are unclear whether lost groundwater infiltration due to rainwater interception is factored into the net water usage at Cornell Farms in Table IV.C-5 in Impact C.3 in the Draft EIR. The commenter notes that rainwater harvesting from impervious surfaces has the potential to diminish groundwater percolation and recharge, which can give rise to an overdraft condition or exacerbate the persistent lowering of groundwater levels where an overdraft situation already exists.

Impact C.3, including Table IV.C-5, focuses on the net change in annual water use at Cornell Farms associated with groundwater demand for proposed winery operations, proposed use of harvested rain water for landscape irrigation and supplementing irrigation of the Cornell Farms vineyards, and proposed use of treated process water for supplementing irrigation of the Cornell Farms vineyards. As discussed in Impact C.3, under either the Interim Project condition (first three years of Project) 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 reduction in the annual demand on the aquifer. Furthermore, given the proposed groundwater pumping schedule (i.e., limit pumping of

the supply well for winery operations to the months of November through July, and reduce pumping for irrigation of the Cornell Farms vineyards that can occur between late August and early November), the Project would not further diminish dry season baseflow to Mark West Creek. Given these factors, the Project impact was determined to be less than significant.

With respect to the potential effect of lost groundwater infiltration due to rainwater interception, the 2006 Todd Engineers study conducted a water balance which showed that on average, 62 percent of rainfall is lost to the atmosphere via evapotranspiration, 34 percent flows to major drainages as surface water runoff, and only 4 percent percolates the soil zone and recharges groundwater. Accordingly, 4 percent of the 140,000 gallons of rainwater harvested, or approximately 5,600 gallons, is the estimated annual amount of water that would otherwise recharge the groundwater system if the Project did not occur. Accounting for this minor annual reduction in inflow, the net annual effect on the groundwater system under Interim Project and Long-Term Project conditions would be an increase of 1,400 gallons and 71,400 gallons, respectively, compared to existing conditions.

Consequently, the proposed increase of impervious area and rainwater harvesting would not substantially diminish groundwater percolation and recharge, and thus, would not have a noticeable effect on the groundwater levels in the aquifer or give rise to an overdraft condition, and accordingly, would not change any conclusions reached in Impact C.3 in the Draft EIR.

B-6 The commenter states that the Draft EIR's characterization of the Project's proposed rainwater harvesting as a percentage of total annual flow in the North Watershed is appropriate. This comment is noted; this characterization is intended to show the relative effect of the Project within the immediate vicinity, including in the North Fork and Mark West Creek immediately downstream.

The commenter also states, however, that the portrayal of the Project's proposed rainwater harvesting as a percentage of the entire Upper Mark West watershed is misleading. Impact C.5 in the Draft EIR presents the annual loss of stream flow as a percentage of flow in the entire Upper Mark West watershed to further illustrate, from a regional perspective, the insignificant effect that the Project's rainwater harvesting would have on the overall hydrologic system. The Draft EIR provides these different comparisons for the reader to understand the relative magnitude of change caused by the proposed Project on loss of stream flow. Please see also the response to Comment B-7, below.

B-7 The commenter disagrees with the Draft EIR's use of annual volumes of water and believes that characterizing Project effects on shorter time frames (i.e., per storm event) and at a "more biologically meaningful temporal scale" would be more appropriate.

Table IV.C-4 in the Draft EIR provides a monthly breakdown of estimated monthly rainwater harvesting volumes. The monthly breakdown illustrates how the proposed harvesting of rain water would be distributed throughout the rainy season. For instance, the highest volume of rainwater (29,400 gallons) would be harvested during the storms in January, when the average monthly rainfall is also at its highest. The proposed monthly harvesting volume is a mere fraction of what would be delivered to the natural drainages and watersheds during typical January storms; it would therefore be difficult if not impossible to measure or observe the effects to the hydrologic system from rainwater harvesting during the individual storm events. This would also hold true for other rainy season months where the winery would harvest proportionally less rain water. Consequently, representing rainwater harvesting losses as an annual volume is appropriate for this analysis, particularly when considering the relatively small annual harvested volume.

Looking at a smaller temporal and spatial scale, the area from which rainwater would be harvested totals an estimated 23,250 square feet, or about one half acre. This represents about 0.06 percent of the 934-acre North Watershed, from which rainwater would be harvested. Therefore, during storm events when runoff occurs and rainwater is being harvested, peak flows from the North Watershed would be reduced by no more than 0.06 percent. This would not be expected to have a discernible effect on peak flows in Upper Mark West Creek.

B-8 The commenter states that the Draft EIR should perform a proper water budget analysis, including groundwater pumping analysis for the affected area in question, namely the neighboring vineyard properties, to support the cumulative analysis. The commenter points to a statement in the Draft EIR which states that, "[w]ater use data for [neighboring] vineyards and wineries is not available" and contends that the County should be able to perform a water budget analysis using accepted estimated rates and values of water use (see Impact C.6, page IV.C-34).

Please response to Comment B-9, below; and Master Response CUM-1 in Chapter II of this Response to Comments Document.

B-9 The commenter references an August 1, 2012 closure of complaint letter prepared by the State Water Resources Board (SWRCB). The SWRCB letter was prepared in response to a complaint received alleging that Cornell Farms diverted from the Mark West Creek watershed without a valid basis of right. The commenter notes the closure of complaint letter concluded with the statement: "*No new and compelling evidence was presented in response to the ROI* (Report of Investigation) *to show that the diversion…was responsible for the diminished flow in Mark West Creek…*"

The commenter asserts that the Draft EIR relies upon the findings of the SWRCB water rights investigation to reach the conclusion that the Project would have a less-than-significant cumulative hydrologic effect. This however, is not the case. The outcome of the SWRCB water rights investigation, cited on pages IV.C-35 and IV.D-43 of the Draft

EIR, is provided only as background information and to acknowledge that the SWRCB investigation did not produce any evidence pointing to existing groundwater use at Cornell Farms as being responsible for the diminished flows in Mark West Creek, or responsible for the stranding of fish that occurred in the North Fork of Mark West Creek summer of 2011.

The basis for the conclusion of a less-than-significant effect of the Project on streamflow may be found in Section IV.C, Hydrology and Water Quality, of the Draft EIR. In particular, please refer to the description of Regional and Project Site Hydrology (pages IV.C-1 through IV.C-11); the detailed analysis of the timing and volume of proposed groundwater extraction and rainwater harvest presented in the discussion of Impact C-3; the analysis of direct effects of proposed rainwater harvesting on surface water flows in the discussion of Impact C-5; and the cumulative discussion in Impact C-6, which analyzes proposed water diversion and use associated with the Project in the regional and watershed context (please see also the response to Comments E-29 and Master Response CUM-1). Based on careful analysis and substantial evidence, as clearly provided in the Draft EIR, and as further supported by the discussions contained in the responses to comments cited above, the conclusion is reached that the Project would have a less-than-significant effect on groundwater and dry season base flows (Impact C.3) and on stormwater runoff and surface water flows (Impact C.5). Based on the analyses in these impact statements, the contribution of the Project to the existing cumulative impact on surface water flows (which is clearly described in both the Setting discussion in the Hydrology and Water Quality section and in the Biological Resources section, as well as in the discussion of Impact C.6) would not be cumulatively considerable (Impact C.6). With mitigation, the Project would not have a direct or indirect significant adverse effect on river lamprey, coho salmon, or steelhead (Impact D.6) or a significant cumulative effect on biological resources (Impact D.12).

B-10 The commenter recognizes the measures incorporated into the Project, and commends the Project applicant for using cutting-edge technology for crop irrigation and proposed rainwater harvesting to reduce impacts to the upper Mark West watershed. These comments are acknowledged.

Sonoma County Permit and Resource Management Department

2550 Ventura Avenue,

Santa Rosa, CA 95403

Attn: David Hardy:

Re: Comment on Draft Environmental Impact Report for Proposed Cornell Winery

We own property at 6587 St. Helena Road, very close to this proposed project. We object to the Draft Environmental Impact Report, because it is inadequate in addressing the serious impact that this project will have to St Helena Road and to Mark West Creek. C-1

The Draft EIR does not address the cumulative impact that over 1,000 trips will have on St. Helena Road, which include trucks that will run every 6 minutes, for a period of at least 18 months. St. Helena Road is in fragile condition and is a lifeline to those only access to property is from the road. It is no longer included in Sonoma County's list of priority roads for improvement. This project will devastate St. Helena Road and the community that relies on it and it is barely discussed, nor effectively mitigated, in the Draft EIR. This is a key issue, and the EIR should not be approved until the project is revised so that St. Helena road is not so negatively impacted. C-2

In addition, the Draft EIR has many inadequacies in terms of Mark West Creek. There would be many impacts to the entire Mark West Creek aquatic systems, including negative impacts on fish species and water usage that are not effectively mitigated. C-3

We urge that the Draft EIR for this project be DISAPPROVED, and that the project be DENIED or sent back to the developer for changes. C-4

Respectively Submitted,

Gayle Sweigert & James McLean

P.O Box 163732

Sacramento, California 96818

September 24, 2012

Letter C. Gayle Sweigert and James McLean

C-1 The commenter asserts that the Draft EIR is inadequate in addressing the impact of the Project on St. Helena Road and Mark West Creek. With respect to the Project impact on St. Helena Road, the commenter is referred to response to Comment C-2, below. With respect to the Project impact on Mark West Creek, the commenter is referred to response to Comment C-3, below.

C-2 The commenter indicates that the Draft EIR does not address the cumulative impact of Project construction truck trips on St. Helena Road. The commenter inaccurately characterizes the frequency of Project truck trips as one truck trip every six minutes over a period of 18 months. The Draft EIR states on page IV.A-6 that the maximum frequency, one truck trip every six minutes, would occur over an initial seven week period during construction, and that during subsequent construction phases, lower truck frequencies would occur.

The commenter is also referred to response to Comment E-58, which addresses revisions made both to peak daily Project truck trips and to total Project truck trips over the 18-month construction duration. As explained in response to Comment E-58 and shown in Chapter V, Errata, the total truck trips over the 18-month construction duration are revised upward from 1,750 to 2,250 round trips; however, the peak daily truck trips during the initial seven weeks of construction are reduced from 40 to 24 round trips. For perspective on these changes, the peak frequency of truck trips is revised from one truck every six minutes traveling to or from the Project site to one truck every ten minutes during this initial seven weeks of construction. Note that over the entire course of the 18-month construction period, the total number of Project-generated truck trips would average approximately five truck round trips per work day. The increase in total Project construction truck trips, and the decrease in peak daily construction truck trips, would not change any conclusions previously reached in the Draft EIR regarding short-term construction impacts on traffic flow, traffic safety, and roadwear; these impacts would remain less than significant.

The Draft EIR traffic impact analysis considered the existing traffic on St. Helena Road. There are no other reasonably foreseeable cumulative projects that would affect traffic conditions on St. Helena Road or alter any conclusions reached in the Draft EIR regarding the effect of the Project on traffic flow, safety conditions and/or roadwear. Please see Master Response CUM-1 in Chapter II of this Response to Comments Document.

C-3 The commenter asserts that the Draft EIR has many inadequacies related to the analysis of impacts on Mark West Creek, indicating there would be many impacts to Mark West Creek aquatic systems, including negative impacts on fish species and water usage that are not effectively mitigated.

The Draft EIR addresses all Project hydrologic and water quality impacts, including potential erosion and sedimentation increases to Mark West Creek (Impact C.1), potential water quality associated with proposed Project winery process wastewater and domestic water (Impact C.2); potential Project groundwater water use and effects on the aquifer (Impact C.3), potential groundwater pumping effects on local surface waters (Impact C.4); potential rainwater harvesting effects on surface water available to the Upper Mark West watershed (Impact C.5); and cumulative hydrology and water quality impacts (Impact C.6). The Draft EIR also addresses all Project impacts to aquatic species, including river lamphrey, coho salmon and steelhead and designated critical habitat (Impact D.6) and cumulative biological impacts (Impact D.12). In all cases, measures proposed as part of the Project, mitigation measures identified in the Draft EIR, and/or compliance with required regulatory permits and approvals, would ensure all Project and cumulative hydrologic, water quality and biological impacts would be less than significant.

C-4 The commenter requests the Draft EIR be disapproved, and the Project denied or sent back to the developer for changes.

This comment does not address the adequacy of the Draft EIR; consequently, no response is required. However, the comment will be considered by the decisionmakers in making a determination whether to approve the Project.

Comment Letter D

PO BOX 457, Mendocino, Ca 95460 937 1649 415 775 1812
September 22, 2012

Sonoma Co. Permit and Resources
Attn: David Hardy
2550 Ventura Ave.
Santa Rosa, Ca 95403

Re: UPE 07-0008, Cornell Winery EIR

ST. Helena Rd. along which I have an 80 acre native plant preserve is a narrow two lane, winding road climbing to the summit of the Mark West Creek watershed. D-1

We strongly object to the Cornell project. It is totally objectionable to have this kind of winery development in this area. It sets a precedence which hasn't in any way been addressed in your review. D-2

The resulting truck traffic is a threat to all the small and large property owners along our road. D-3

If the Planning Commission approved the EIR in the Sept. 6th hearing, I believe that is entirely wrong. Please reject this project. D-4 Note that the vineyards for which the new owners purchased this property provides all the income that is warranted. D-5 The winery is unnecessary and totally detrimental to the quality of life of our area and any other similiar area. D-6

Sincerely yours,

Susan M. Smith

Susan M. Smith

RECEIVED
SEP 24 2012
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT
COUNTY OF SONOMA

Letter D. Susan M. Smith

D-1 The commenter states that St. Helena Road is a narrow, two lane, winding road climbing to the summit of the Mark West Creek watershed.

The comment is noted. The Draft EIR, page IV.A-2 to IV.A-3, provides additional information on the physical characteristics of St. Helena Road.

D-2 The commenter expresses objection to the Project.

This comment does not address the adequacy of the Draft EIR; consequently, no response is required. However, the comment will be considered by the decisionmakers in making a determination whether to approve the Project.

D-3 The commenter indicates that Project truck traffic would be a threat to property owners along St. Helena Road.

The Draft EIR addresses all potential Project traffic impacts on pages IV.A-6 to IV.A-8, including those related to short-term increases in Project construction truck traffic, and long-term increases in operational truck traffic. The commenter is also referred to response to Comment E-58, which addresses revisions made to both peak daily Project truck trips and total Project truck trips over the 18-month construction duration. These revisions would not change any conclusions previously reached in the Draft EIR regarding short-term construction impacts on traffic flow, safety, and roadwear, which would remain less than significant.

D-4 The commenter indicates that it is wrong if the Planning Commission approved the EIR at the September 6th, 2012 public hearing.

The Project was not approved at the September 6th, 2012 public hearing. As discussed in the CEQA Process discussion in Chapter I, Introduction in this Response to Comments Document, on August 8, 2012, the County of Sonoma released for public review the Draft EIR on the proposed Project. A 45-day public review and comment period on the Draft EIR began on August 8, 2012, and closed on September 24, 2012.

The purpose of the public hearing held before the Sonoma County Board of Zoning Adjustments on September 6, 2012 was not to approve the Project, but rather, to receive oral public comment on the adequacy of the Draft EIR. At the close of this public hearing, the Commission discussed the Draft EIR and provided their comments on it. These comments on the adequacy of the Draft EIR are responded to in this Response to Comments Document, along with responses to comments made by other agencies and concerned members of the public.

The Draft EIR, together with this Response to Comments Document, constitute the Final EIR for the proposed Project. The Final EIR must be considered by decision-makers (the

Sonoma County Board of Supervisors) before approving the proposed Project (CEQA *Guidelines*, Section 15090). The Final EIR will be brought before the Board of Supervisors, who will make their decision on the adequacy of the environmental document and whether the Project as proposed or an alternative to the Project should be approved.

D-5 The commenter indicates the Project should be rejected.

This comment does not address the adequacy of the Draft EIR; consequently, no response is required. However, the comment will be considered by the decisionmakers in making a determination whether to approve the Project.

D-6 The commenter indicates that the existing vineyards provide all the income tax that is warranted, and that the winery is unnecessary. These comments do not address the adequacy of the Draft EIR; consequently, no response is required. However, the comment will be considered by the decisionmakers in making a determination whether to approve the Project.

The commenter also indicates that the winery would be detrimental to quality of life in the area. The Draft EIR analyzes the potential environmental impacts of the Project, and all significant environmental effects are mitigated in this Draft EIR to a less than significant level. To the extent that the Project's environmental effects also represent a quality of life issue (e.g., dust and noise during construction), these effects are addressed and mitigated to the extent feasible in the Draft EIR.

10.453.01

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September 24, 2012

VIA EMAIL AND FEDERAL EXPRESS OVERNIGHT DELIVERY
dhardy@sonoma-county.org

David Hardy, Supervising Planner
County of Sonoma, Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Re: Henry Cornell Winery Project, 245 Wappo Road

Dear Mr. Hardy:

On behalf of the members of New-Old Ways Wholistically Emerging ("NOWWE"), we respectfully submit the attached Draft EIR Comments regarding the proposed Henry Cornell Winery Project ("Project") at 245 Wappo Road, Santa Rosa. We incorporate by reference the attached letters and exhibits. Please include this letter and its attachments and exhibits in the public record on this matter.

Very truly yours,

for

Stephan C. Volker
Attorney for New-Old Ways
Wholistically Emerging

COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

IN RE CORNELL WINERY	)	
ENVIRONMENTAL IMPACT REPORT	)	UPE 07-0008
_____	)	State Clearinghouse # 2008102040

DRAFT EIR COMMENTS OF NEW-OLD WAYS WHOLISTICALLY EMERGING

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Attorneys for NEW-OLD WAYS
WHOLISTICALLY EMERGING

1

ATTACHED EXHIBITS

Exhibit A:	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of RGH Response to Cotton, Sires & Assoc. Geotechnical Review of Proposed Rainwater Tanks,* September 5, 2012
Exhibit B:	Raymond Waldbaum, The Engineering Geologist, *Geologic Review of EIR Comments Regarding Water Availability*, September 12, 2012
Attachment 1:	NOWWE October 8, 2009 Comment Letter
Exhibit A	NOAA letter to the Board of Supervisors (June 7, 2005)
Exhibit B	RGH Consultants, Updated Preliminary Geologic Study Report (Apr. 22, 2008)
Exhibit C	Sonoma County, Mitigated Negative Declaration, with attached Initial Study and Environmental Checklist (Sept. 2008)
Exhibit D	Waldbaum Decl., Geologic Review of Updated RGH Geologic Report (Nov. 11, 2008)
Exhibit E	Li Decl. (Nov. 12, 2008)
Exhibit F	Kamman Decl., "Technical Review of Henry Cornell Winery" (Nov. 12, 2008)
Exhibit G	DFG letter to the Board of Zoning Adjustments (Nov. 24, 2008)
Exhibit H	DWR letter to Mr. David Hardy, Sonoma County PRMD (Dec. 3, 2008)
Attachment 2:	NOWWE November 5, 2009, Comment Letter
Exhibit 1	NOAA letter to the Board of Supervisors (June 7, 2005)
Exhibit 2	Board for Geologists and Geophysics letter to RGH Environmental (Sept. 15, 2005)
Exhibit 3	Kamman Decl., "Technical Review of Henry Cornell Winery" (Nov. 12, 2008)
Exhibit 4	D. Scott Magorien, "Review of professional geological work by William V. McCormick" (March 20, 2009)

Exhibit 5	Board for Geologist and Geophysics, "Citation Order" addressed to William McCormick (Apr. 29, 2009)
Exhibit 6	Li report, "Habitat Inventory and Initial Assessment of Anthropogenic Sedimentation of Upper Mark West Creek, Sonoma County, California" (June 27, 2009)
Exhibit 7	Waldbaum Decl., "Geologic Review of RGH Geologic Report in Response to BZA Comments, Cornell Wine Factory" (Oct. 23, 2009)
Exhibit 8	Robinson Decl., "Review of Reports for Cornell Winery" (Oct. 23, 2009) [Geology]
Exhibit 9	Robinson Decl., "Review of Reports for Cornell Winery" (Nov. 3, 2009) [Hydrogeology]
Exhibit 10	Waldbaum Decl., "Proposed Road Paving," (November 4, 2009)
Attachment 3:	NOWWE November 11, 2009, Comment Letter
Exhibit 1	North Coast Regional Water Quality Control Board memorandum dated April 18, 2006 re Landslide Notification – Wappo Road, Upper Mark West Creek
Exhibit 2	Board for Geologists and Geophysicists letter to Ms. Sigrid Swedenborg dated July 29, 2005 re Compliance with Business and Professions Code Section 7800 *et seq.* (Geologist and Geophysicist Act)
Attachment 4:	NOWWE February 10, 2010, Comment Letter
Attachment 5:	NOWWE February 24, 2010, Comment Letter
Exhibit 1	County of Sonoma Permit and Resource Management Division, Request for Service dated November 1, 2002
Attachment 6:	NOWWE March 31, 2010, Comment Letter
Exhibit 1	Items 1-31 of the *Sonoma County Groundwater Studies Checklist*
Exhibit 2	Sonoma County's *Procedure for Implementing General Plan Policy RC-3h* [currently Policy WR-2(e)];

Exhibit 3	PRMD publication number 9-2-28, *Well Pump Test Guidelines in Water Scarce Areas*
Attachment 7:	NOWWE September 21, 2010, Comment Letter
Attachment 8:	NOWWE Scoping Comments
Exhibit A	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Proposed Stormwater, Domestic Waste and Process Wastewater Disposal,* February 1, 2011
Exhibit B	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Report in Support of Proposed Rainwater Tanks*, November 1, 2011
Exhibit C	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Preliminary Grading, Drainage, and Erosion Control Plan*, November 8, 2011
Exhibit D	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Supplemental Groundwater Availability Study*, January 11, 2012
Exhibit E	Jules Evens and Lisa Hug, Avocet Research Associates, *Review of Biological Resources Report for the Cornell Winery Project,* September 14, 2011
Exhibit F	Patrick Higgins, Consulting Fisheries Biologist, *Comments on Impact of the Proposed Cornell Winery Project to Mark West Creek Pacific Salmon Species and Critical Habitat*, January 2012
Exhibit G	Peter R. Baye, Coastal Ecologist, Botanist, *Assessment of Special-Status Plant Species Impacts and Adequacy of Mitigation*, December 12, 2011
Exhibit H	Derek Acomb, California Department of Fish and Game, *Memorandum on Fish Relocation*, September 7, 2011
Exhibit I	Derek Acomb, California Department of Fish and Game, *Memorandum on Snorkel Survey*, September 7, 2011
Exhibit J	Laura Waldbaum, Informational Timeline Regarding Fish Stranding in the North Fork, August 16, 2011
Exhibit K	James Robinson, JR Squared Consulting Inc., *Review of Reports for Cornell Winery*, February 11, 2012

Exhibit L	Dean O. Gregg, The LeBaugh Group, Inc., *Review of Supplemental Groundwater Availability Study*, February 18, 2012
Exhibit M	Laura Waldbaum, *Note Regarding Water Delivery*, December 5, 2011
Exhibit N	Cotton, Shires and Associates, Inc., *Geologic and Geotechnical Peer Review, Proposed Storm Water Storage Tanks,* November 14, 2011

I. INTRODUCTION

As set forth in New-Old Way Wholistically Emerging's ("NOWWE's") Scoping Comments, Mark West Creek has suffered extreme environmental degradation in recent years including landslides, sedimentation, dewatering, loss of riparian vegetation including mature redwoods and oaks, and unsustainable groundwater pumping. These damaging activities have destroyed fish and wildlife habitat including coho salmon and steelhead spawning and rearing habitat. These protected salmonid species are now threatened with extirpation in this formerly pristine watershed. The proposed Henry Cornell Winery Project would exacerbate this degradation. E-1 E-2

NOWWE's Scoping Comments addressed five broad areas where prior environmental review was deficient, including inadequate analysis of the Project's hydrological, biological, and traffic impacts, numerous geotechnical deficiencies, and unlawfully deferred mitigation measures. Unfortunately, NOWWE's comments were mostly ignored. E-3

NOWWE hereby incorporates its Scoping Comments by reference into this letter, and hereby requests that each and every statement in its Scoping Comments be separately responded to in full as though part of this comment letter. Please note that NOWWE's Scoping Comments (Attachment 8 hereto) themselves incorporated the previous comment letters submitted by NOWWE regarding this Project. E-4

In addition to failing to address the inadequacies outlined in NOWWE's Scoping Comments, the EIR has numerous other problems. For one, the EIR unlawfully omits crucial studies, thereby preventing meaningful public review. The EIR also abruptly drops the planned conservation easement mitigation measure – rejecting the most environmentally beneficial alternative – without adequate explanation. Additionally, the EIR fails to properly analyze the cumulative impacts of the Project as combined with reasonably foreseeable future development. E-5 E-6 E-7

NOWWE urges the County to remedy these inadequacies. Because fixing these problems will result in the addition of significant new information to the EIR, the County must then recirculate the Draft EIR for additional public review. CEQA Guidelines [14 C.C.R.; "Guidelines"] § 15088.5. E-8

II. THE DEIR'S ANALYSIS OF HYDROLOGICAL IMPACTS IS INADEQUATE.

NOWWE's Scoping Comments noted five overarching deficiencies in past analyses of the Project's hydrological impacts. The EIR repeats these errors and also fails to account for the cumulative impacts of the Project. E-9

First, the EIR fails to account for the water use of *both* the vineyard *and* the winery. The Project's total water use includes that of both the vineyard *and* the winery E-10

for the three reasons outlined in NOWWE's Scoping Comments. *See* Scoping Comments at 2 and references therein. E-10 cont.

Second, even leaving the first deficiency to one side, the planned water storage tanks are inadequate to mitigate the impact on Mark West Creek of the Project's water use. While the DEIR admits that the "proposed pumping of groundwater from the aquifer could diminish the dry season base flow of Mark West Creek," it inexplicably concludes that no mitigation is required for this crucial impact, apparently because the planned rainwater harvesting tanks would offset the winery's water use. DEIR IV.C-24. E-11

In addition to the shortcomings with the harvesting system mentioned in NOWWE's Scoping Comments (at pages 2-3), the EIR relies upon flawed and inaccurate assumptions that undermine its entire analysis. NOWWE pointed out that landscaping water use estimates must account for the seasonal variability of rainfall. Scoping Comments at 2-3. "For example, a warm and dry spring would 'lead to a longer irrigation season resulting in greater total water use.'" *Id.* at 3 (citations, brackets, and ellipsis omitted). The DEIR ignores the impacts of any such increased water demand completely; it instead assumes that landscaping will require exactly the same amount of water at the same time every year regardless of rainfall patterns. *See* DEIR IV.C-26-27 & fns. 14 and 15. Even under the DEIR's own terms (which as discussed below are flawed), an approximately seven percent increase in landscaping water needs would cause the Project to increase overall water use for at least three years. *Compare* Table IV.C-5 (overall, only 7,000 gallon reduction in annual demand) with DEIR IV.C-27 fn. 14 (about 93,000 gallons of landscaping water use). Given that the DEIR's conclusions are based entirely on this supposed 7,000 gallon reduction, it is crucial that the DEIR accurately estimate landscaping water use. E-12

Many of the DEIR's assumptions are unsubstantiated. The "Long-Term" estimates of landscaping water use were conveniently estimated to be exactly 25 percent of the "Interim" figures, without explanation. Similarly, the DEIR states that the rainfall harvesting system is 23,250 square feet, but this estimate is unsubstantiated in the EIR and is nearly four times the size of the winery itself. *Compare* DEIR III-13 *with* DEIR IV.C-25. The public is prevented by this omission from verifying the accuracy of these crucial figures. Moreover, the DEIR ignores the environmental consequences, including substantial erosion, that could result from an overflow of the collection system. *See* Scoping Comments at 3. E-13

Moreover, the DEIR falsely claims that the rainwater harvesting system "would reduce the existing annual groundwater pumped at Cornell Farms, and consequently, reduce the annual demand on the aquifer." DEIR IV.C-29. This statement *completely ignores* the fact that rainwater that is "harvested" is prevented from infiltrating into the aquifer, where a substantial portion would normally flow. There is no substantial difference between pumping a gallon of groundwater and harvesting a gallon of rainwater that would otherwise become groundwater. As the National Marine Fisheries Service notes in its DEIR comments, "Rainwater harvesting from impervious surfaces . . . has the potential to diminish groundwater percolation and recharge, which can give rise to an E-14

overdraft condition or exacerbate the persistent lowering of groundwater levels where an overdraft situation already exists. Several factors suggest the upper Mark West Watershed aquifer is already in an overdraft state. . . ." NMFS DEIR comments at 2. For this reason, the DEIR's conclusion that project groundwater pumping is inconsequential is unfounded. E-14 cont.

Third, the DEIR fails to adequately consider the environmental consequences of the Project's groundwater pumping. As set forth in NOWWE's Scoping comments, the Project will indirectly draw water from Mark West Creek during dry months. Scoping Comments at 5-10. This impact is significant. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 448-449 (holding significant a ground water pumping project's potential impact on the Cosumnes River during periods of very low flow). The DEIR's deficiencies fall into three main areas. E-15

The DEIR improperly relies upon Todd Engineers' studies from over five years ago to support its conclusion that water resources will not be affected by the Project's groundwater pumping. As NOWWE has pointed out repeatedly in the past, Todd's work is subpar for numerous reasons and its conclusions are unreliable. *See, e.g.,* Scoping Comments at 6-7 and citations therein.[1] The DEIR, like Todd, asserts that the overall amount of water that will be withdrawn from Mark West Creek from the Project is *de minimis* when compared to the overall amount of water in the entire watershed. DEIR at IV.C-33. But "characterizing the impacts based upon an analysis of annual water volumes lacks meaning and should be removed from the document." NMFS Draft EIR comments at 3; *see also* NOWWE's October 8, 2009, letter at 3-4 ("these sorts of unsupported conclusory statements that rely on logical inferences instead of factual analysis have been repeatedly held by the courts to *not* constitute substantial evidence") (citations omitted). The DEIR again relies on Todd's inadequate studies. No response to NOWWE's expert testimony on this point was offered. E-16

The DEIR also improperly failed to require the completion of a constant-rate aquifer test as part of the environmental review process. "An aquifer pump test is E-17

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[1] NOWWE explained that "Todd's site investigation was 'completely inadequate' in Raymond Waldbaum's 'professional opinion' because Todd relied only upon 'regional geologic maps that are totally unsuitable for characterizing individual sites.' . . . As geologist Dean Gregg relates, 'none of the data or information used are reliable or substantiated by actual field data from the site area. No geologic mapping was performed and only references to a coarse-scaled geologic map were used.' . . . the regional maps used by Todd *explicitly state* that improperly using them 'for detailed planning' in connection with 'maps with dwelling unit density zones and ownership parcels,' would '*almost surely*' lead to 'distortions[,] misrepresentations of fact,' and 'erroneous judgments affecting substantial interests.' . . . Todd's 2006 study was also deficient because it measured the flow in Mark West Creek at a USGS gauge about 17 miles from the Project site." Scoping Comments at 6 (internal brackets and ellipses omitted; emphasis supplied).

required to adequately evaluate potential impacts from Cornell groundwater withdrawals on local-area water resources, and, in turn, ecological conditions sustained by dry-season, groundwater-fed baseflow in the Northern and Southern drainage area creeks." Scoping Comments at 7 (brackets omitted; citing Exhibit F to NOWWE's October 8, 2009, letter at 3). The EIR's conclusions are "'of limited value'" without the information supplied by this crucial test. Scoping Comments at 7 (quoting Department of Water Resources). Because the constant-rate aquifer was not completed, the Project also fails to comply with the mandatory Sonoma County Groundwater Checklist, in addition to Sonoma County General Plan Water Element Policy WR-2(e), which requires proof of groundwater availability in water-scarce areas like the Project vicinity. This violates CEQA. Guidelines § 15125.

E-17 cont.

E-18

E-19

The excuses given by the DEIR for its failure to require a constant-rate aquifer test have been offered before and remain inadequate. Now, as in the past, the DEIR claims that performing a constant-rate aquifer test would be difficult and expensive. This is not a justification for not performing the test. NOWWE explained this in its Scoping Comments:

> As NOWWE first noted more than two years ago, "CEQA does not allow developers to avoid its requirements whenever they prove financially burdensome. The purpose of CEQA is not to suit the convenience of project applicants, but rather to 'inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made.'" November 11, 2009 letter, at 2 (quoting *Meija v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 330). CEQA requires the EIR to contain a full and complete analysis of the environmental consequences of the Project's groundwater pumping. *Vineyard*, *supra*, 40 Cal.4th at 448-49. Todd's conclusion that an airlift test sufficed has no scientific basis and therefore is not substantial evidence. Guidelines § 15384(a). The EIR must include the results of a constant-rate aquifer test.

E-20

Scoping Comments at 8.

The DEIR does claim that a constant-rate aquifer test was not performed because (1) no suitable wells currently exist for such a test and (2) "[t]he nature of the fractured bedrock makes placement of . . . two wells within the same aquifer unit problematic." DEIR IV.C-9. The latter statement is not supported by any reference or citation. *Id.* But to the extent the DEIR's vague statements are intended to be a claim that completion of a constant-rate aquifer test is *technically* infeasible, the DEIR is wrong. With regard to the first statement, as explained in Mr. Raymond Waldbaum's September 12, 2012, report (attached hereto as Exhibit B), the fact that suitable wells do not currently exist obviously does not mean that new ones cannot be drilled. Exhibit B at 5. And Sonoma County General Plan Policy WR-2e explicitly "require[s] test wells" to be established "in Class 4 water areas."

E-21

E-22

With regard to the second DEIR claim, it is Mr. Waldbaum's professional opinion that "[t]echnology exists to drill through the most difficult formations" and "[t]he only issue is one of cost." *Id.* Moreover, Sonoma County *specifically requires* evidence of groundwater availability for projects in Zone 4 areas – like this Project. Exhibit B at 4. Zone 4 areas generally coincide with the mapped distribution of Franciscan complex bedrock, the same bedrock unit underlying the Project. *Id.* For this reason, "to exempt this site" from the required completion of a constant-rate aquifer test on the basis of "problematic . . . fractured bedrock" as the DEIR does "would have the practical effect of exempting all projects in Zone 4 areas. That would defeat the goal of wise and sustainable use of groundwater in Zone 4 areas." *Id.* E-23

Finally, the DEIR simply ignores the fact that, as explained by NOWWE's expert fisheries biologist *any* pumping of groundwater – even during *wet* months – will reduce base flows in Mark West Creek in the *dry* months. NOWWE's expert biologist noted that observed temperature differences in Mark West Creek "clearly indicate[] that 'groundwater and/or hyporheic[2] water . . . is helping sustain juvenile steelhead' in Mark West Creek" and the "'North Fork aquifer is likely feeding the mainstem Mark West Creek through subsurface flows, even when there is no surface water connection.'" Scoping Comments at 9-10 and citations therein. The reason that wet season pumping affects dry season flows is that "flow into the groundwater basin is dependent upon the increased pressure created by large volumes of water, and when less water flows into the groundwater basin during the winter less water and thus less pressure exists to force water from the basin out into the stream during the summer." Scoping Comments at 10. The DEIR ignores the expert testimony accompanying NOWWE's Scoping Comments and completely fails to mention this issue. E-24

Fourth, the DEIR's analysis of the impacts of the Project's runoff is inadequate. While the DEIR admits that "being in hilly terrain, the Project would require strict control of surface runoff to provide long-term satisfactory performance of the project elements," the DEIR completely fails to quantify the amount of runoff that the Project will generate, despite NOWWE's requests. *See* DEIR IV.C-21 through 22 and IV.B-24 through 25; *cf.* Scoping Comments at 11. E-25

Similarly, the DEIR unlawfully defers formulation of the mitigation measures that will be used to control this runoff until after Project approval. DEIR IV.B-24, IV.C-21 through 22 ("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"); *see* Scoping Comments at 29. The DEIR's evasiveness and obfuscation prevent NOWWE and other interested parties from meaningfully analyzing the impacts that the Project's runoff. NOWWE extensively commented on specific previous proposed runoff control measures. Scoping Comments at 12 (noting that planned rain gardens and vegetative buffers could themselves have significant impacts and in any event are unlikely to substantially reduce the Project's impacts); *see also* Scoping Comments at 27 (discussing erosion related to E-26

[2] The hyporheic zone is where groundwater and surface water mix.

wastewater disposal pipeline). But the DEIR's failure to include specific proposed measures prevented the public from meaningfully reviewing and commenting upon such measures. E-26 cont.

Fifth, the DEIR's analysis of process wastewater disposal is deficient. As NOWWE pointed out in its Scoping Comments, the process wastewater would be pumped uphill. Scoping Comments at 13. The possibility of pump failure, through electricity shortages or otherwise, should have been but was not acknowledged in the DEIR. DEIR IV.C-22 through 24. The possibility of failure of the pump used to lift domestic wastewater was also ignored. Similarly, the capacity of the "fully enclosed aerobic package treatment plant" was not disclosed and the possibility of overflow was thereby overlooked. DEIR IV.C-23; *cf.* Scoping Comments at 13. E-27 E-28

Sixth, and finally, the EIR's cumulative impact analysis is wholly insufficient. As discussed above, the EIR concludes that the Project's water use will not have a significant impact solely because of the allegedly *de minimis* nature of the withdrawals in the contexts of the broader aquifer. *See* DEIR at IV.C-33 ("minor amount"), IV.C-35 ("negligible"). This conclusion is unfounded without a meaningful cumulative impacts analysis to support it, which the DEIR lacks. Given that the area's water supply is indisputably either already overdrawn or very close to it, it is plainly inappropriate for the County to individually approve the use of 140,000 gallons of water here and 100,000 gallons of water there – at the same time it is issuing innumerable ministerial vineyard approvals – without looking at the broader picture of how a series of such actions affect the environment. E-29

The EIR concludes that "Sonoma County PRMD is not aware of any other specific proposed future development projects" and "[a]s a result, the proposed Project represents the only reasonably foreseeable proposed discretionary development in the . . . eastern portion of the Upper Mark West Creek Watershed." DEIR IV.C-34. This statement is doubly flawed. Regardless of whether "PRMD is . . . aware of . . . specific propos[als]," the EIR must address any and all *reasonably foreseeable developments*; without an estimate of the extent to which additional development will occur, the EIR's determination that no cumulative projects exist is meaningless. *Id.* Moreover, the CEQA Guidelines mandate that EIRs include either a *list* of all cumulative projects or a summary of projections upon which the cumulative effect determinations are based (Guidelines § 15130(b)(1)), yet the DEIR includes neither. Instead, it makes the following statement that is so vague as to be meaningless: E-30

> 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.

DEIR IV.C-34. The DEIR gives *no* indication of how many such projects are being considered, where they might be located, what size they could be, how much water they might use, when they could be developed, or exactly what the "some impacts" they "will"

cause are. There is *no* quantified information at all. Such a cumulative impact analysis is inherently incomplete. "The EIR must contain facts and analysis, not just the bare conclusions of a public agency." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 736 (quotation omitted). "An agency's opinion concerning matters within its expertise is of obvious value, but the public and decision-makers, for whom the EIR is prepared, should also have before them the basis for that opinion so as to enable them to make an independent, reasoned judgment." *Id.* Here, "the public and decision-makers" simply cannot meaningfully assess the extent to which the Project's water use will contribute to the scarcity of ground and surface waters, or whether Project approval will result in additional strandings of protected salmonids, with only the vague information contained in the DEIR.

E-30 cont.

The DEIR also improperly bases its conclusions on the supposed fact that "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 responsible for the fish strandings recently observed in the section of the North Fork of Mark West Creek below St. Helena Road." DEIR IV.C-35. This statement "is logically false." NMFS DEIR comment letter at 3. The SWRCB closed the complaint in question on the basis that "no new and compelling evidence was presented" to substantiate it. *Id.* "The fact that no new evidence was submitted demonstrating an effect does not prove an effect does not exist. Actually, no detailed analysis was performed to prove or disprove any potential effect." *Id.* The entire point of conducting cumulative impact analysis in an EIR is to *actually determine* whether or not cumulative impacts will occur *as a result of this Project*. Instead, the DEIR omits such an analysis on the basis that a separate state agency found that a complainant failed to meet the evidentiary burden required to support adverse regulatory action against a supposedly unconnected business enterprise of the applicant (his vineyards). This is nonsensical. And even apart from the DEIR's incorrect equation of negative evidence with a mere lack of evidence, whether or not the "*existing groundwater use* at Cornell Farms is responsible for diminished flows" gives no indication of whether *the proposed winery* will diminish such flows.

E-31

Similarly, the DEIR relies upon "a recently completed study [that] assessed the potential effect of land use development on changes and streamflows" to support its conclusions. This study was not included in the EIR. Nor was it attached to the EIR as an appendix. Other important studies were likewise omitted. *See, e.g.,* DEIR chapter IV.B (failing to include any geotechnical studies). This violates CEQA, which requires that significant technical studies be made available to the public *in the EIR itself. Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 442; *California Oak Found'n v. City of Santa Clarita* (2005) 133 Cal.App.4th 1219, 1239. Omitting crucial studies plainly prevents informed and meaningful public review and thereby violates CEQA.

E-32

In sum, the DEIR ignores many of the points made in NOWWE's Scoping Comments and fails in its role as an informational document. It must be revised and recirculated.

III. THE DEIR'S ANALYSIS OF BIOLOGICAL IMPACTS IS INADEQUATE.

E-33

The DEIR repeats the five analytical deficiencies noted in NOWWE's Scoping Comments, as set forth below.

E-34

First, the biological inventories that were conducted are inadequate. To accurately determine the plant and animal species present on-site, follow-up tests should have been but were not performed. The DEIR relies upon the same inadequate inventories discussed in NOWWE's Scoping Comments; no new inventories were conducted. *See, e.g.,* DEIR IV.D-12 (table of surveys conducted). As fully set forth in NOWWE's Scoping Comments, the seasonal timing of surveys was inappropriate; systematic bat and terrestrial mammal surveys were not conducted; nesting bird surveys were improperly timed, occurring at the wrong time of year and the wrong time of day; and the size of the buffer zones is inadequate. Scoping Comments at 14-15.

E-35

Second, the proposed mitigation for special-status plants is inadequate, controversial, and unproven. Scoping Comments at 15-16. The Supreme Court held in *Vineyard* that a potential impact on threatened species "is *per se* significant." *Vineyard,* 40 Cal.4th at 449 (citing Guidelines § 15065(a)(1)). The EIR merely requires the future "develop[ment]" of "a five-year mitigation plan" – whose specific contents are unknown – to fully mitigate the Project's impacts on a special-status plant. DEIR IV.D-36.

E-36

As also fully discussed in NOWWE's Scoping Comments, there "is no scientific basis for the [DEIR's] view that transplantation is an effective means of mitigating impacts to the rare native plants found onsite. All of the scientific evidence confirms to the contrary that translocation is risky and ineffective. . . . 'There appears to be no scientific or practical technical support for a presumption of compensatory mitigation success in translocation.' . . . 'Proposals for translocation of rare plants without scientific basis is more rationalization of destruction than mitigation methodology.'" Scoping Comments at 16 (brackets and citations omitted). The DEIR includes *no* detail about its reliance on the risky and unproven mitigation of translocation of narrow-anthered California brodiaea; as noted above, the mitigation plan has not been developed. As NOWWE pointed out, "The loss of this population, or reduction of its viability to the threshold at which it may undergo long-term decline, would cause extirpation of one of only 28 known occurrences, many of which are threatened with declines or extirpation." Scoping Comments at 15 (citation omitted).

E-37

Additionally, the EIR omits discussion of the narrow-anthered California brodiaea that were *destroyed* by the applicant between the proposal of the project and the completion of the DEIR. As explained in NOWWE's Scoping Comments, CEQA requires assessment of Project impacts to be based on the environment as it existed at the outset of environmental review – here, 2009, which is before the brodiaea in question were removed. Scoping Comments at 15-16. Any different rule would encourage environmental destruction during the pendency of environmental review. The applicant's removal of *brodiaea* also constitutes an unlawful pre-approval of the Project. *Id.*

Third, analysis of the Project's impacts on special-status animals, including the Northern Spotted Owl and numerous special-status bats, is inadequate. E-38

The DEIR concludes that noise from the Project will not disturb the Northern Spotted Owl and accordingly did not require *any* mitigation measures specific to the Northern Spotted Owl. DEIR IV.D-44 through 45. The DEIR bases its conclusions on assumption that "the proposed Project would have to be within 50 meter[s] (165 feet) of an occupied territory to have substantial noise impact." DEIR IV.D-45. But this "is a misinterpretation of the USFWS requirements" and "the effective harassment zone may be on the order of 300 to 500 meters (984-1640 feet)." Exhibit E to Scoping Comments at 13.[3] One Northern Spotted Owl territory is a mere 1,900 feet from the Project. Given this extreme proximity, the fact that "owl territories are not fixed in space" and that "[l]ocations of those territories may shift in future nesting seasons," it simply cannot be said that the Project will *certainly not* affect this protected species. *Id.* "It is essential that the locations and status of each Northern Spotted Owl within a 1.3 mile radius of the project site be evaluated during each year of construction activity." Scoping Comments at 17 (brackets, ellipses, and citations omitted). The DEIR does "no[t] require[]" such monitoring or mitigation. DEIR IV.D-45 (capitalization altered). E-39

The DEIR also ignores the fact that, as discussed in NOWWE's Scoping Comments, the dusky-footed woodrat – which is a "primary prey base of the Northern Spotted Owl" – utilizes habitat on-site. Exhibit E to Scoping Comments at 4. Nearby owls may venture on-site to prey upon these rodents. Scoping Comments at 17. E-40

Moreover, while the DEIR admits both that the Project site "supports potentially suitable habitat for a number of special-status bat species" and that "[b]ats were observed" onsite, the DEIR claims without explanation that "identification [of] species was not possible." DEIR IV.D-25. Rather than allow the public to meaningfully determine whether or not the Project will adversely affect bats, instead the DEIR proposes to complete bat surveys after approval to determine whether protected bats are present. DEIR IV.D-47 through 48. It then conditionally requires development of a mitigation plan – whose specific terms such as buffer size are a mystery – to protect these unknown protected bat species whose presence supposedly cannot be determined for an unstated reason. *Id.* This preposterous charade precludes informed decision-making and makes a mockery of CEQA review. E-41

Fourth, substantive analysis of the Project's impacts on special-status fish species has once again been studiously avoided.[4] As discussed at length above, in NOWWE's E-42

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[3] In fact, the underlying Biological Resources Report relied upon by the DEIR used an incorrect and outdated set of noise protocols. Scoping Comments at 17. The surveys conducted to determine the presence of Northern Spotted Owls were also conducted pursuant to an incorrect and outdated protocol. *Id.* at 16-17.

[4] The DEIR, like the Biological Resources Report upon which it was based, concludes that "the Project site does not support potentially suitable habitat for river

Scoping Comments, and in the exhibits thereto, taking water out of the groundwater aquifer, be it through rainwater harvesting or through winter season pumping, *could reduce dry season flows in Mark West Creek* because the groundwater aquifer and the surface flows are hydrologically linked. Additionally, the DEIR *admits* that the Project is likely to cause *some* amount of erosion and sedimentation. DEIR IV.B-25, 28 through 29 (merely claiming that compliance with to-be-developed erosion control measures would "help reduce" the amount of sedimentation to some undefined but less-than-significant level). E-42 cont.

Such sedimentation and reduction of flows will combine with the effects of other development in the vicinity to increase the frequency with which Mark West Creek is completely dewatered and is thereby likely to kill endangered salmonid species, as NOWWE and its experts have amply shown. Scoping Comments at 19-22 and citations therein. Yet the DEIR ignores NOWWE's detailed expert comments. Instead it blithely concludes that the Project, even when combined with all other past, present, and reasonably foreseeable future development in the area, certainly would not adversely these protected species – *for the same unlawfully vague and logically false reasons it dismissed the Project's cumulative hydrological impacts*. DEIR IV.D- 43 through 44, 50 through 51. Once again the DEIR concludes that a different agency's determination in a different proceeding about the evidence submitted in support of a complaint about the environmental effects of one of the applicant's different ventures is somehow sufficient to excuse the lack of evidence and analysis in the DEIR. *Id.* Once again the DEIR fails to list any cumulative projects, as required. Once again the DEIR contains bare conclusions rather than facts and analysis. Once again the DEIR violates CEQA. E-43

Fifth, as mentioned, the DEIR unlawfully defers the formulation of many biological resource mitigation measures. DEIR IV.D-36 ("a five-year mitigation plan shall be developed"), 38 ("the arborist shall prepare a report"), 39 ("a seven-year mitigation plan shall be developed"), 47 ("if active nests are found, species-specific measures shall be prepared"), 48 ("if evidence of bats is found, the Project applicant shall implement" measures whose precise form is undetermined). CEQA prohibits such schemes that attempt to finalize crucial details outside of the public eye. *See* Scoping Comments at 29 and citations therein. E-44

The DEIR fails to rectify past errors in analysis of the Project's impacts. It fails to provide specificity about mitigation measures. And its cumulative impact "analysis" contains nothing of the sort. NOWWE urges the County to revise and recirculate this inadequate DEIR. E-45

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lamprey, coho salmon, or steelhead." DEIR IV.D-43. Wrong, as shown in NOWWE's Scoping Comments. Scoping Comments at 17-18.

IV. THE EIR'S ANALYSIS OF THE PROJECT'S GEOLOGY, SOILS, AND SEISMICITY IMPACTS IS INADEQUATE.

The DEIR fails to demonstrate that the Project site is geotechnically feasible. Inappropriately siting the Project could lead to landslides, with disastrous impacts for Mark West Creek. The DEIR mostly fails to respond to NOWWE's expert testimony and the limited new study that was conducted on one issue is inadequate. These deficiencies fall into four main areas. E-46

First, the DEIR fails to adequately analyze the risk of slope instability at the site of the winery building itself. The report upon which the DEIR relies for its analysis has numerous methodological deficiencies, as shown by NOWWE, including but not limited to the absence of any large-diameter borings and the failure to complete a comprehensive slope stability analysis. Scoping Comments at 22-24. The DEIR *admits* that in its estimation "one of the identified *active* landslides is located approximately 50 feet southeast of the edge of the proposed winery building pad." DEIR IV.B-12. The DEIR goes on to discuss numerous dormant landslides present onsite and "just southeast of the proposed winery buildings." *Id.*

But despite the obvious risks posed by such siting and the clear need to ascertain the exact locations of these landslides, the geologic mapping necessary to determine the precise boundaries of the landslides present on-site have never been conducted. Scoping Comments at 22-24. The public has not been provided with a geologic map that depicts both the winery footprint and the nearby landslide. The actual distance between the winery building and the landslide is unknown and could easily be less than the DEIR's 50-foot estimate. Because this crucial information is unknown, "the underlying issue of site stability remains unresolved." *Id.* at 24 (citing Exhibit C to Scoping Comments at 24). Additionally, the DEIR, like the studies upon which it is based, ignore the possibility that the landslides will enlarge in an upslope direction (called "headward enlargement"). *Id.* at 23. Any such headward enlargement could consume the winery building itself. *Id.* at 23. E-47

Second, the geotechnical analysis of the proposed rainwater storage tank site is inadequate. NOWWE detailed numerous deficiencies with the existing reports in its Scoping Comments. Scoping Comments at 25-26. RGH subsequently prepared a supplemental report on the stability of the rainwater storage tank location, upon which the DEIR relies to support its conclusions of insignificance. *E.g.,* DEIR IV.B-22 through 23. This report is itself inadequate for numerous reasons discussed in the expert testimony of Raymond Waldbaum (attached hereto as Exhibit A). E-48

The Geologic Map prepared by RGH "does not contain any data indicating geologic structure in the proposed tank site," without which "landslide potential at the proposed tank site is unknown." Exhibit A at 2. The limited subsurface investigation that has occurred "encountered the same geologic materials that formed large landslides throughout this same site." *Id.* at 3. The limited cross-sections that were produced exclude information regarding the orientations of the encountered materials, information

that is crucial to making an informed assessment of slope stability. *Id.* at 2-3. Moreover, "the proposed method of creating the tank pad, construction of high retaining walls and placement of soil backfill, will add surcharging weight to the slope upon which the tanks are to be placed," which "has the potential to reduce slope stability." *Id.* E-48 cont.

RGH also relied on inadequate and improper data. RGH reviewed only two aerial photographs of the site. "Experienced geologists know that critical geologic features, such as landslides, may be clearly evident on one set of photos of a site but not on another site. That is why thorough research . . . includes multiple sets of photos." *Id.* at 3. In fact, the Sonoma County Assessor's Office has at least five sets of aerial photographs of the County, which would have provided valuable information regarding the presence of landslides if they had been consulted. *Id.* Similarly, RGH improperly relied upon CDMG Special Report 120 to provide information about *actual* rather than *apparent* landslides. *Id.* That report *itself* states, "Use of [CDMG Special Report 120] data for detailed planning at scales larger than these maps will lead to distortions and misrepresentations of fact." *Id.* E-49

RGH in its report attacked Mr. Waldbaum for having received a citation relating to work performed by another geologist for Mr. Waldbaum as a client. Whether the geologist hired by Mr. Waldbaum performed adequately in his 1999 report has no bearing upon whether Mr. Waldbaum is qualified to opine on the adequacy of the geotechnical review of this Project. In fact, that geologist did *not* receive a citation for his work – which has performed flawlessly – only Mr. Waldbaum, his client, inexplicably did. In any event, the citation in question is not final and is being administratively appealed within the relevant agency. It is beyond galling that RGH would (improperly) rely on such a non-final citation when in fact RGH has itself received at least two inquiries regarding substandard work it performed on behalf of the project applicant. *See id.* at 4-5 and citations therein. E-50

Third, the poor siting of the leach field (for the disposal of domestic wastewater) is likely to cause significant environmental impacts, as discussed in NOWWE's Scoping Comments, in three main respects. Scoping Comments at 26-28. The DEIR ignores NOWWE's concerns. *Cf.* DEIR IV.B-27 through 28. E-51

The DEIR does not discuss the possibility that nearby wells may draw effluent from the leach field. *See* Scoping Comments at 27 (citing NOWWE September 21, 2010, letter at 12). E-52

The leach field site also has not been shown to be geotechnically stable. Even RGH's analysis shows that it is underlain by landslides, and the site is also is located directly above very steep and unstable slopes. *Id.* at 26-27. (While RGH claims this landslide occurred only "within road fill," the fact is that "the 'location of the slope failure is outside of the area of road fill on RGH maps.'" *Id.*) Past landslides in the area have been triggered by improperly sited leach fields. Rather than dismissing NOWWE's comments without explanation, the DEIR should be revised and recirculated to take into account these unstable slopes and must precisely quantify the likelihood of slope failure. E-53

The DEIR similarly ignores the impacts associated with construction of the 3,000 foot pipeline connected to the leach field. NOWWE pointed out many unresolved questions that prevent meaningful public review. How deep will the pipeline be buried? How will dust and erosion be controlled during construction? Will the soil overlaying the pipe settle, thereby converting the pipeline into a channel that will increase erosion? Must the pipeline be placed in bedrock to avoid being damaged by truck traffic? NOWWE specifically requested that the DEIR address such issues. Its failure to do so renders the EIR useless as an informational document. E-54

Fourth, the DEIR fails to adequately analyze the Project's seismic risks. The EIR does not discuss the environmental consequences of the Project's use of side hill fills, which tend to fail in earthquakes, despite NOWWE's requests. Scoping Comments at 28. E-55

Further, the DEIR admits that the Project was only designed to survive ground acceleration at levels "that have a 10 percent probability of being exceeded in 50 years." DEIR IV.B-14 through 15. The DEIR does *not* discuss or estimate the impacts if an earthquake whose strength exceeds this threshold were to occur; it simply promises that the buildings will remain standing through 90% of the earthquakes that are likely to occur in the next 50 years. *Id.*; *see* DEIR IV.B-20 through 21. What happens the other 10% of the time? The DEIR does not say, but presumably the structures in question would not survive. DEIR IV.B-14. The EIR must clearly acknowledge this risk, explore the impacts that would occur in the event of such an earthquake, and mitigate any resulting impacts to the maximum extent feasible. The EIR does none of these things. E-56

V. THE EIR UNLAWFULLY DISMISSES THE PROJECT'S TRAFFIC IMPACTS WITHOUT ADEQUATE EXPLANATION. E-57

The DEIR's analysis of construction-related traffic impacts is inadequate. Despite NOWWE's pleas for detailed information, the DEIR contains no substantiation of the "construction traffic estimates" in Table IV.A-1. No related studies were made a part of the EIR. It does not appear that all construction equipment was accounted for. As discussed above, the 3,000 foot pipeline could require extensive excavation, particularly if it is placed in bedrock, which would further magnify these figures. The DEIR fails to explain whether and how the swell factor was accounted for in these figures, which could itself inflate the estimates by between 40 and 85 percent. Waldbaum 2010 at 8. The DEIR's failure to include detailed information prevents meaningful public review of these impacts. E-58

The DEIR's remaining statements are exceedingly conclusory. NOWWE noted that the thousands of truck trips caused by this project could degrade the extremely poor existing surface of St. Helena Road. Scoping Comments at 28. The DEIR fails to substantiate its vague claim that "generally" these impacts are "not" "considered . . . for short-term construction truck traffic." DEIR IV.A-7. The DEIR also claims that because the "peak construction period" is "limited in duration" it need not analyze in detail the E-59

truck traffic that will result or the environmental impacts thereof. DEIR IV.A-7. Yet even on the DEIR's own flawed terms, "as many as 40 daily truck *round trips* could be expected over a period of approximately seven weeks" – corresponding to "one truck approximately ever six minutes" – and that for the other seventeen months of construction about "five round trips per day" would occur. DEIR IV.A-5. St. Helena Road is extremely dangerous. Scoping Comments at 28. The DEIR must analyze in detail the safety implications of sending thousands of trucks over a winding mountain road in a period of less than two months. The DEIR must contain facts and analysis, not mere conclusions. *Kings County, supra,* 221 Cal.App.3d at 736.

E-59 cont.

The DEIR proposes that 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." DEIR IV.A-6. This measure is *not* listed as a formal mitigation measure in the DEIR and is therefore unenforceable. *Id.* The impacts that this mitigation measure will cause are not discussed. If originally the Project would generate one truck every six minutes, how many trucks will be generated with what resulting impacts if they are forced to make all deliveries during off-peak periods?

E-60

VI. THE DEIR'S ALTERNATIVES ANALYSIS IS INADEQUATE.

The DEIR's alternatives analysis violates CEQA. The DEIR concludes that the no project alternative is the environmentally superior alternative. DEIR V-21. In such a case, "the EIR shall also identify an environmentally superior alternative among the other alternatives." Guidelines § 15126.6(e)(2). Accordingly, the DEIR states that:

> 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.

E-61 cont.

DEIR V-21. The DEIR rejects this alternative, however, on the grounds that "[t]he 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." DEIR III-9. Even though this alternative was included because it "would reduce environmental impacts compared to the proposed Project," no finding of infeasibility was made and no further explanation beyond the applicant's own opinion was given for the rejection of this environmentally superior alternative. DEIR V-6.

E-61 cont.

The Legislature made its intent in requiring an alternatives analysis under CEQA very clear:

> The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

Pub. Res. Code § 21002. Accordingly, "[o]ur Supreme Court has described the alternatives and mitigation sections as 'the core' of an EIR." *Los Angeles Unified School Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1029 (*citing Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564).

E-62

CEQA's substantive requirements demand that environmentally superior alternatives be adopted where feasible. Pub. Res. Code § 21002.1(b); Guidelines § 15002(a)(3) (CEQA "[p]revent[s] significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible"); *Kings County, supra,* 221 Cal.App.3d at 730-31 ("*Kings County*"). *Kings County* lays out the requirements for a feasibility analysis under this rule:

> CEQA does not require the lead agency to choose the environmentally best alternative identified in an EIR if (1) through the imposition of feasible mitigation measures identified in the report the environmental damage from a project can be reduced to an acceptable level, or (2) the agency finds specific economic, social or other considerations make alternatives infeasible. Even though the agency ultimately finds mitigation measures adequate or proposed alternatives infeasible, the EIR must still contain a meaningful discussion of both alternatives and mitigation measures. The determination to reject such alternatives or mitigation measures must be supported by recorded findings.

Id. at 731, citations omitted.

The California Supreme Court has determined that a feasibility analysis must govern the selection of environmentally superior alternatives. *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 565 ("In determining the nature and scope of alternatives to be examined in an EIR, the Legislature has decreed that local agencies shall be guided by the doctrine of 'feasibility'"); *see also Citizens for Open Government v. City of Lodi* (2012) 205 Cal.App.4th 296, 313. Further,

> it is the policy of the state that public agencies should not approve projects as proposed if there are *feasible alternatives* or *feasible mitigation measures* available which would substantially lessen the significant environmental effects of such projects . . . . [I]n the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof.

Citizens of Goleta Valley, *supra*, 52 Cal.3d at 565 (quoting Pub. Resources Code, § 21002 (emphasis supplied)). Compared to this rigorously delineated feasibility analysis, the DEIR's analysis of alternatives is sorely lacking .[5]

E-62 cont.

"One of [an EIR's] major functions . . . is to ensure that all reasonable alternatives to proposed projects are thoroughly assessed by the responsible official." *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 197; *accord Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 400; *Bowman v. City of Petaluma* (1986) 185 Cal.App.3d 1065, 1083–85. Alternatives are not merely hypothetical possibilities a decisionmaker may elect to implement or disregard at their whim or that of the applicant. CEQA alternatives are serious possible solutions to environmental impacts that require rigorous feasibility analysis so that the public can follow the agency's rationale for rejecting them. *Laurel Heights*, *supra*, 47 Cal.3d at 405.

When analyzing alternatives, the reviewing agency must provide a good faith and reasoned analysis. *San Francisco Ecology Center v. City and County of San Francisco* (1975) 48 Cal.App.3d 584, 596 (citing CEQA Guidelines § 15088(b)). If the alternative being analyzed is rejected, CEQA Guidelines section 15091(a) requires that the agency make a finding of infeasibility and support that finding with substantial evidence in the record. Guidelines § 15091(b). The DEIR fails to do so and its discussion of alternatives is therefore inadequate.

[51] Public Resources Code sections 21002, 21002.1, and 21081 all provide that agency approval must be predicated on a publicly reasoned determination that project alternatives are infeasible.

VIII. CONCLUSION

The DEIR ignores NOWWE's detailed submissions and fails as an informational document. It must be revised and recirculated. E-63

Thank you for considering our views on this important matter.

Very truly yours,

Stephan C. Volker
Attorney for New-Old Ways Wholistically Emerging

EXHIBIT A

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September 5, 2012

County of Sonoma
Permit and Resource Management Department
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Subject: **Engineering Geologic Review of RGH Response to Cotton, Shires & Assoc. Geotechnical Review of Proposed Rainwater Tanks, 245 Wappo Road, Sonoma County, California.**

INTRODUCTION

I have reviewed a report dated June 13, 2012 by RGH Consultants in support of proposed rainwater storage tanks on the Cornell site at 245 Wappo Road. The purpose of the review was to determine whether RGH has demonstrated the geologic stability of the proposed tank site. Please place this letter in the public record for this project.

A prior RGH geotechnical report concerning the same proposed rainwater tanks (Reference 20) was reviewed by me (Reference 21) and by Cotton, Shires & Assoc. (Reference 22).

The results of both my review and Cotton, Shires' review indicated that Reference 20 failed to demonstrate the geologic stability of the proposed tank site. In my professional opinion, the RGH report dated June 13, 2012 similarly fails to demonstrate the geologic stability of the proposed tank site. The bases for this opinion are presented in a subsequent section of this report.

RGH has repeatedly demonstrated a lack of ability to recognize the adverse geologic conditions on the Cornell site. Details of this situation are presented in the following section and in the Conclusion section of this report.

E.A-1

BACKGROUND INFORMATION

The Cornell site has been the object of geologic investigations by RGH and

E.A-2

professional peer reviews by me, JR2 Consulting, Kleinfelder and Cotton, Shires and Associates. The RGH investigations of this site have been ongoing since mid 2004. The investigations, professional peer reviews and inquiries about possible substandard practice and incomplete stability analysis by RGH have generated at least 22 separate documents (See References 1-22 of this report). It is unheard of in my professional experience of over 43 years for a simple site like this one to still be under investigation after the expenditure of so much time, effort and money. The extensive number of these RGH investigations of the same site and professional peer reviews reviews from 2004 through the present, including inquiries about possible substandard practice and incomplete stability analysis from the California Board for Geologists and Geophysicists and the Board for Professional Engineers and Land Surveyors (References 2 and 3), indicates possible substandard practice by RGH on this site over a period of many years. The RGH investigations of the proposed tank site do not appear to be any better. The serious deficiencies in the RGH tank site report dated June 13, 2012 are described in the following section of this report.

E.A-2 cont.

RGH REPORT DATED JUNE 13, 2012

The RGH report dated June 13, 2012 includes a Geologic Map and a Geologic Cross Section. Unfortunately, the Geologic Map does not contain any data indicating geologic structure in the proposed tank site. According to the Boring Log in the RGH report dated October 21, 2011 (Reference 20) the boring encountered sandstone, siltstone and shale between 4 and 42 feet below the ground surface. Shale is defined in *Sedimentary Rocks* (Reference 23) as follows: "Shale is a laminated or fissile claystone or siltstone". Any unfavorably oriented bedding (lamination) surfaces within the 38 foot portion of the boring reportedly drilled by RGH that exposes these sedimentary rocks are potential failure surfaces. Despite that, RGH has not plotted the orientation(s) of bedding planes on the geologic map. Thus a critical "piece of the puzzle" in assessing landslide potential at the proposed tank site is unknown.

E.A-3

The proposed method of creating the tank pad, construction of high retaining walls and placement of compacted soil backfill, will add surcharging weight to the slope upon which the tanks are to be placed. This surcharge has the potential to reduce slope stability and that issue should be evaluated in assessing slope stability, and the stability analysis should be peer reviewed by Cotton, Shires & Associates, the County-designated geotechnical reviewer on this project.

E.A-4

Furthermore, the line of Geologic Cross Section A'-A plotted on the Geologic Map (Plate 2) does not pass through the proposed tank site, yet the "Rainwater Tank" is shown on the Cross Section (Plate 4) that is designated Cross Section A"-A. No line of Cross Section A"-A is plotted on the Geologic Map provided for my review.

E.A-5

It is also important to note that Cross Section A"-A does not show the specific lithology encountered in the borings plotted on the Cross Section nor does the Cross Section

E.A-6

show any geologic structure within the Franciscan materials that were encountered in the borings. In my professional experience, one of the principal objectives of drilling and logging exploratory borings in areas of potential geologic instability (landsliding) is to obtain, graphically illustrate and analyze abundant data concerning lithology (rock types) and geologic structure (orientations of faults, contacts, bedding planes and other potential planes of weakness). These kinds of features are described qualitatively in the Boring Log in the RGH report dated October 21, 2011 (Reference 20). However, their orientations are not described in the Boring Log and are not plotted on the Geologic Map or on the Geologic Cross Section and are, thus, apparently unknown. In an area of abundant landslide hazards, such as the Cornell property, these types of data are critical in assessing slope stability and project feasibility. E.A-6 cont.

The subsurface investigation of the proposed tank site apparently encountered the same geologic materials that formed large landslides throughout this same site (Franciscan Assemblage), described in the RGH Boring Log in the October 21, 2011 report as "soft, plastic, highly weathered to completely weathered, extremely closely fractured and weak". This does **not** appear to be a description of strong, competent, stable geologic materials. On the contrary, based on the RGH reports, it appears to be the same type of material that has failed, forming large landslides throughout the site. If RGH claims that the tank site is stable although it is surrounded by landslides, that assertion must be rigorously proven. Otherwise the claim is mere unsubstantiated conjecture. E.A-7

The RGH report dated June 13, 2012 states on page 3 that "...stereo paired aerial photographs (WAC, 1996, Roll 17, Frames 99 & 100 were reviewed in addition to our field reconnaissance". Why were so few aerial photographs (only one pair) reviewed? Experienced geologists know that critical geologic features, such as landslides, may be clearly evident on one set of photos of a site but not on another set. That is why thorough research of stereo pairs of aerial photos includes multiple sets of photos. The Sonoma County Assessor's office has stereo pairs of aerial photographs of the County flown in 1961, 1970, 1980, 1990 and 2000. I have found the 1980, 1990, and 2000 aerial photographs of the Cornell site to be valuable in recognizing landslides there. E.A-8

The RGH report dated June 13, 2012 states also on page 3 that the Landslides and Relative Slope Stability map in CDMG Special Report 120 was used in assessing the landslide hazards on the site. While Special Report 120 is valuable in assessing the apparent prevalence of landsliding in an area, it is **not** suitable for site specific landslide hazard assessment. This simple concept is explained by the authors of Special Report 120 as follows "For these reasons, use of the data for detailed planning at scales larger than these maps will lead to distortions and misrepresentation of fact. The error will become greater with greater disparity of scales, because the larger the scale, the greater the implication of high-level detailed E.A-9

investigation".

E.A-9 cont.

RGH COMMENTS REGARDING QUALITY OF WALDBAUM REVIEW

I have worked in the field of Engineering Geology from 1969 through the present as a public agency (Los Angeles County Engineer's office) reviewer, in geotechnical consulting firms and in private practice. Since approximately 2001, I have reviewed geotechnical reports prepared by local geotechnical consultants. These peer reviews sometimes disclosed errors and omissions in the consultants' reports, potentially resulting in delays and additional costs to developers. My peer reviews may have triggered the complaint against my license referred to by RGH.

As stated in the RGH report dated June 13, 2012, my personal residence is located in the same neighborhood as the Cornell property. In 1999, a geotechnical investigation of my residence site was performed by the geotechnical consulting firm, Brian A. Robinson & Associates, Inc. The report was signed by Brian A. Robinson who is licensed in the State of California as a Professional Geologist, Engineering Geologist, Civil Engineer and Geotechnical Engineer. In 2011, 12 years after completion of the Robinson work, a complaint against me was made alleging defects in the Robinson geotechnical report relating to a landslide mapped on my property in Special Report 120, but proven by Robinson to not exist, based upon a through and very detailed site subsurface investigation. The "Enforcement Action" against me that resulted from that complaint has been appealed based on the following simple facts:

E.A-10

1. Section 7835 of the Geologist Registration Act of 1968 states " All geologic plans, specifications, reports or documents shall be prepared by a registered geologist, or registered certified specialty geologist, or by a subordinate employee under his direction. In addition, they shall be signed by such registered geologist, or registered certified specialty geologist or stamped with his seal, **either of which shall indicate his responsibility for them**". Brian A. Robinson has not even been contacted by the licensing board concerning this matter yet I, his client, received a "Citation". Finding one geologist (client/property owner) responsible for the work of another geologist (consultant) is unprecedented in the State of California.

2. It is obvious that the findings of the Robinson report are correct because the site improvements, including the residence, are performing flawlessly.

PEER REVIEW OF GEOLOGY FOR CORNELL WINERY PROJECT

On the Cornell project, my initial site review in 2005 identified the landslide hazards on the site from examination of aerial photographs even though those same landslides were not recognized by the RGH geotechnical "investigation". When finally acknowledged by RGH and Kleinfelder, the landslides were considered by these two firms insignificant to the project. Cotton, Shires & Associates was hired by the County

E.A-11

to replace Kleinfelder after an inappropriate verbal outburst at a public hearing on the project. Cotton, Shires & Associates also recognized the high degree of landslide hazard that I had previously pointed out, and the proposed winery building was then relocated to a different portion of the Cornell property.

Were it not for the information provided in my early reports, prepared on behalf of NOWWE, the winery would likely be built and operating now and subject to damage or destruction by future landslide movement. This stark reality should not be forgotten in considering my professional opinions concerning the feasibility of this project and its attendant building construction, onsite disposal of sewage and industrial effluent, disposal of concentrated storm water on potentially unstable slopes and withdrawl of ground water in this Sonoma County-designated "water scarce" area. Finally with regard to disciplinary actions by the Board for Professional Engineers, Land Surveyors and Geologists, it is incumbent on me to point out that RGH, who is still the project proponents' geotechnical consultant, has been issued inquiries about possible substandard practice and incomplete stability analysis twice for work on this project (See References 2 and 3 and Appendix).

E.A-11 cont.

SUMMARY

In summary, it is my professional opinion that the RGH report dated June 13, 2012 and prior reports do not include sufficient data and analysis to demonstrate the geologic stability of the proposed tank site for the many reasons stated above.

E.A-12

I trust that this report fulfills your present requirements. If there are any questions about information in this report, of if additional information is required, please do not hesitate to call.

Very truly yours,

Raymond Waldbaum

Raymond Waldbaum
Professional Geologist 3142
Certified Engineering Geologist 923

REFERENCES

1. *Groundwater Availability Study, Cornell Winery And Vineyard, Santa Rosa, California* by RGH, dated July 15, 2004.
2. Board for Geologists and Geophysicists inquiry about possible substandard practice to RGH dated September 15, 2005.
3. Board for Professional Engineers And Land Surveyors Re. Complaint No.: CG 2009-13 dated December 13, 2010

4. *Engineering Geology Overview, 420 Wappo Road, Sonoma County, California, APN 028-260-047* by Raymond Waldbaum, RG, CEG, dated January 31, 2005
5. *Mapped Landslides, 420 Wappo Road and Vicinity, Sonoma County, California, APN 028-260-047* by Raymond Waldbaum, RG, CEG, dated June 2, 2005.
6. *Preliminary Geologic Study, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006.
7. *Geotechnical Study, Cornell Property Landslide, 245 Wappo Road, Santa Rosa, California* by RGH, dated October 20, 2006.
8. *Geologic Review of Geologic and Geotechnical Reports In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041,* by Raymond Waldbaum, RG, CEG, dated January 21, 2008.
9. *Preliminary Geologic Study Repot, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006 (Updated April 22, 2008)
10. *Review of Preliminary Geologic Study Report, RGH Consultants, Inc. (Updated April 22, 2008), Cornell Winery, 245 Wappo Road, Sonoma County, California* by Kleinfelder, dated July 2, 2008.
11. *Response To BZA Comments, Cornell Winery, 245 Wappo Road, Santa Rosa, California,* by RGH dated September 21, 2009.
12. *Review of Response to BZA Comments (12-15-08) by RGH Consultants, Inc. ((-21-09), Cornell Winery, 245 Wappo Road, Sonoma County, California* by Kleinfelder, dated October 1, 2009.
13. *Geologic Review of Updated RGH Geologic report In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County California, APN 028-260-041,* by Raymond Waldbaum, RG, CEG, dated November 11, 2008.
14. *Review of Reports For Cornell Winery, 245 Wappo Road, Santa Rosa, CA 95404* by JR2 Consulting, Inc, dated October 23, 2009.
15. *Geologic Review of RGH Geologic Report In Response to BZA Comments, Cornell Wine Factory, 245 Wappo Road, Sonoma County* by Raymond Waldbaum, RG, CEG, dated October 23, 2009.
16. *Geologic and Geotechnical Peer review, Proposed Cornell Winery, 245 Wappo Road* by Cotton, Shires & Associates, Inc. dated February 16, 2010.
17. *Geotechnical Study Report, Cornell Winery, 245 Wappo Road, Santa Rosa, California, APN 028-260-041* by RGH dated June 23, 2010.
18. *Supplemental Geologic and Geotechnical Peer review, Proposed Cornell Winery, 245 Wappo Road* by Cotton, Shires & Associates, Inc. dated July 2, 2010.
19. *Geologic Review of Supplemental RGH Geologic Report In Response to Cotton-Shires Review, Cornell Wine Factory, 245 Wappo Road, Sonoma County,* by Raymond Waldbaum, RG, CEG, dated September 9, 2010.
20. *Geotechnical Study Report Update, Rainwater Tanks, Cornell Winery, 245 Wappo Road, Santa Rosa, California, APN 028-260-041* by RGH, dated October 21, 2011.
21. *Engineering Geologic Review of report In Support of Proposed Rainwater Tanks, 245 Wappo Road, Sonoma County, California* by Raymond Waldbaum, RG, CEG, dated November 1, 2011.

22. *Geologic and Geotechnical Peer Review, Proposed Storm Water Storage Tanks, Cornell Winery, 245 Wappo Road* by Cotton, Shires & Associates, Inc. dated November 9, 2011.

23. *Sedimentary Rocks* by F.J. Pettijohn, Professor of Geology, John Hopkins University, Harper & Row, Library of Congress number 56-11820.

EXHIBIT B

The Engineering Geologist
Since 1969
RG 3142 CEG 923
7945 St. Helena Road Santa Rosa, CA 95404
Phone 707-539-2577
Fax 707-539-5773

September 12, 2012

County of Sonoma
Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403-2829

Subject: **Geologic Review of EIR Comments Regarding Water Availability, Cornell Winery, 245 Wappo Road, Sonoma County, California.**

ABSTRACT

The proposed Cornell Winery site is in a Zone 4 "water scarce" area depicted on the County-prepared Water Availability Map. The Zone 4 designation covers roughly one half of Sonoma County, based on the abundance of Franciscan Complex bedrock in the County. It is inconceivable that the County would designate roughly one half of its area as requiring special water availability investigations and testing and then exempt projects because it is "problematic" (according to the EIR) to do the mandated investigations because of the very same geologic conditions that create the water scarcity in the first place.

Conclusions about water availability in the EIR appear to be based on characterization of the geologic setting that disregards information prepared by project geotechnical consultants and geotechnical reviewers. The EIR appears to accept as scientific facts the opinions of Todd Engineering that are based on review of small scale (1"=1 mile) regional maps rather than site specific geologic investigations. The EIR appears to accept as fact that, despite the County-prepared Water Availability Map and the County-mandated water availability investigation procedures, unsubstantiated "estimates" are good enough because of the absence of "suitable" (according to the EIR) preexisting wells and proper investigation and testing being "problematic" (according to the EIR).

E.B-1

INTRODUCTION

I have reviewed information in the Draft EIR for the proposed project by ESA dated August 2012 concerning water availability. This information is presented on pages IV.C-9 through IV.C-11, under the heading Groundwater Hydrology. My review is limited to characterization of subsurface geologic conditions at the site and claims of

"exemption" from County-mandated water availability investigation and testing.

Both the general characterization of site geologic conditions within the Cornell property and the stated reasons for not performing County-required water availability tests are, in my professional opinion, inconsistent with what is known about the Cornell property and inconsistent with the County-prepared water availability map and the County-required information to document water availability in "Water scarce" areas of the County. These issues are discussed in detail in the following sections of this report.

E.B-1 cont.

BACKGROUND INFORMATION

In Sonoma County one of the critical issues affecting the feasibility of land development is determining whether an adequate supply of water exists. In response to public pressure and a Grand Jury recommendation, Sonoma County Permit and Resource Management Department (PRMD) has prepared a map showing the relative abundance of groundwater throughout the County. This **Groundwater Availability** map (Reference 1) was published by PRMD in 2003 and designates four zones as follows:

Zone 1. Major groundwater basin.
Zone 2. Major natural recharge area.
Zone 3. Marginal groundwater availability area.
Zone 4. Areas with low or highly variable water yield.

Areas of Sonoma County in Zones 3 and 4 are considered "Water Scarce" . For proposed projects in Zones 3 and 4, PRMD has instituted a very specific and detailed set of investigative procedures that must be completed to prove that water is available for the proposed project and that use of this water will not adversely affect neighboring water users and the environment. For ease of reference these requirements are in the Appendix of this review report.

E.B-2

RGH groundwater investigation.

The first groundwater availability investigation of the Cornell wine factory site was performed by RGH Consultants. The results of this investigation were summarized by RGH in *Groundwater Availability Study, Cornell Winery And Vineyard, Santa Rosa,California* , dated July 15, 2004 (Reference 2).

In response to citizen complaints, the RGH report dated July 15, 2004 was reviewed by the California Board for Geologists and Geophysicists. As a result of this Board review, the Board issued an inquiry about possible substandard practice to RGH (Reference 3 and Appendix)

E.B-3 cont.

Todd Engineers groundwater investigation.

As a result of the findings of inadequacy in the RGH report, Todd Engineers performed another water availability investigation of the Cornell site and the results were presented by Todd in *Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California,* dated August 2006 (Reference 4)

The Todd water availability investigation dated August 2006 was reviewed in *Engineering Geologic Review of Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California, California by Todd Engineers,* dated January 11, 2012, by Raymond Waldbaum, P.G., C.E.G. (Reference 5) and in *Review of "Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California" dated August 2006 by Todd Engineers, Emeryville, California and related Documents"* dated February 18, 2012, by Dean O. Gregg, P.E., P.G., C.H.G. (Reference 6)

Both my review and the Gregg review of the Todd report reached the same basic conclusion. I stated "According to the PRMD Groundwater Availability map the site is in Zone 4, characterized by 'Areas with low or highly variable water yield'. It is my professional opinion that fundamental geologic data required to characterize the site are simply not present in the Todd report. To quantify any site characteristic, including groundwater availability, without site specific data yields conclusions that cannot be relied upon. It is for that reason that PRMD has instituted special requirements for groundwater availability investigations in Zone 4 and those requirements have not been met by Todd."

Gregg stated "In summary, the Todd report does not address the deficiencies of the RGH report. A long term (several days) aquifer test (as required by SCPRMD) was not conducted nor were water quality samples taken and analyzed. Further, the estimated recharge to the fractured rock aquifer is suspect without verification and documentation."

E.B-3 cont.

COUNTY CLAIMS OF PROJECT EXEMPTION

Part of my work in reviewing the Todd water availability geologic report consisted of asking the PRMD employee reviewing the project, Environmental Health Specialist Jon Tracy, via email why he approved a water availability investigation that clearly did not conform to the PRMD requirements. In response Tracy invoked two reasons in the emails included in the Appendix of this report.

1. "The General Plan says that discretionary projects in Class 3 and 4 areas will do a groundwater study, and that the procedure for doing the study shall consider the expense of the study in relation to the water needs of the project".

E.B-4 cont.

In my experience in land development issues since 1969, this vague statement does not mean *If obtaining the information would be inconvenient and/or expensive the information will not be required.*

2. "So far we have not interpreted that to mean that no evaluation at all is required. Instead, where the parcels are large (about 100 acres or larger) and the projects are small, say 15,000 case winery or smaller, we have accepted a letter from a California Registered Geologist explaining that there is little to no likelihood that this project in this setting could have an adverse impact on the neighboring water supply."

This "exemption" is fatally flawed for four reasons:

First, there is no regulatory basis for it. It is completely arbitrary.

Second, a "letter" from a geologist stating an opinion without appropriate geologic site data and analysis is mere conjecture that proves nothing. The Todd report is a good example because, even according to Todd, no site geologic data were obtained.

Third, the "letter" is not reviewed for adequacy by a licensed geologist as required by California law when the review is an application of professional judgment. One of Jon Tracy's reviews concerning the Cornell project is in the Appendix of this report to show that it is, indeed, unlicensed practice of geology and, thus, invalid.

Finally, and most important, this site is in a Zone 4 "water scarce" area depicted on the County-prepared Water Availability Map. The Zone 4 designation covers roughly one half of Sonoma County based on the abundance of Franciscan Complex bedrock in the County. It is inconceivable that the County would designate roughly one half of its area as requiring special water availability investigations and testing and then exempt projects because it is "problematic" (according to the EIR) to do the investigations because of the very same geologic conditions that create the water scarcity. In fact, to exempt this site because, according to the EIR, doing the required tests is "problematic" because of "The nature of the fractured bedrock...." would have the practical effect of exempting all projects in Zone 4 areas. That would defeat the goal of wise and sustainable use of groundwater in Zone 4 areas.

E.B-4 cont.

EIR CLAIMS OF PROJECT EXEMPTION

As stated in the Introduction Section of this report, both the general characterization of site geologic conditions within the Cornell property and the stated reasons for not performing County-required water availability tests are, in my professional opinion, inconsistent with what is known about the Cornell property and inconsistent with the County-prepared Water Availability Map and the County-required information to document water availability in "Water scarce" areas of the County.

E.B-5

With regard to the characterization of the general geologic setting of the Cornell property, the EIR states "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 proposed the 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."

This characterization of the geologic setting of the site is inconsistent with the representations made by RGH since 2004 that the Cornell property is underlain wholly by Franciscan rocks. In fact, in *Preliminary Geologic Study Repot, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006 (Updated April 22, 2008) (Reference 7) RGH states "Based on Huffman and Armstrong (1980) and Fox (1973), the winery site is shown to be underlain by the Sonoma Volcanics; however, our findings indicate the site to be underlain by the Franciscan Complex" and "Our test pits and supplemental borings confirm the winery site is underlain by materials of the melange unit of the Franciscan Complex". The Geologic Cross Section A-A' in in *Preliminary Geologic Study Repot, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006 (Updated April 22, 2008) shows a queried contact between Franciscan and Sonoma Volcanic bedrock at the extreme edge of the site, outside of the area explored and proposed for development

E.B-5 cont.

It is therefore clear that the EIR ignored the findings of the project geotechnical consultant, RGH, in characterizing the geologic setting of the site, and used only small scale (1"=1 mile) maps.

With regard to the assertion in the EIR that aquifer tests weren't performed because there were no "no suitable wells for doing so", if testing of wells is required by the PRMD requirements, the requirements do not presume that the wells are preexisting. In fact, most undeveloped land is devoid of water wells. If the wells are not already present, obviously they must be drilled before they can be tested. There is nothing in the PRMD requirements to contradict this simple fact.

With regard to the assertion in the EIR that "The nature of the fractured bedrock makes placement of the two wells within the same aquifer unit problematic", geologic subsurface investigation in mountainous terrain is often problematic (ie challenging). Nevertheless, it is an essential part of the land development process and is successfully completed every day by competent geologic consultants. Technology exists to drill through the most difficult formations. The only issue is one of cost.

E.B-6

The challenges encountered by geologists in investigating sites are challenges of technical skill and adequate resources (ie adequate budgets). There is absolutely no exemption that I have ever heard of that allows developers to bypass regulatory requirements simply because meeting those requirements would be expensive.

Geologic investigation of sites proposed for development is part of the cost of doing business. E.B-6 cont.

I trust that this report fulfills your present requirements. If there are any questions about information in this report, of if additional information is required, please do not hesitate to call.

Very truly yours,

Raymond Waldbaum

Raymond Waldbaum
Professional Geologist 3142
Certified Engineering Geologist 923

REFERENCES

1. *Groundwater Availability Map,* by Sonoma County Permit and Resource Management Department, copyright 2003

2. *Groundwater Availability Study, Cornell Winery And Vineyard, Santa Rosa, California* by RGH, dated July 15, 2004.

3. Board for Geologists and Geophysicists letter of substandard practice to RGH dated September 15, 2005.

4. *Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California,* by Todd Engineers, dated August 2006.

5. *Engineering Geologic Review of Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California, California by Todd Engineers, dated August 2006,* by Raymond Waldbaum, dated January 11, 2012.

6. *Review of "Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California" dated August 2006 by Todd Engineers, Emeryville, California and related Documents,* by Dean O. Gregg.

7. *Preliminary Geologic Study Repot, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006 (Updated April 22, 2008)

Letter E. Law Offices of Stephan C. Volker - Draft EIR Comments of New-Old Ways Wholistically Emerging (Stephan C. Volker, Attorney)

Introduction

The commenter (Stephan C, Volker, from the Law Offices of Stephan C. Volker) submitted a letter that contained a substantial number of attachments and exhibits, including both new and re-submitted information. This Introduction provides context for how the County has considered all relevant issues raised by the commenter.

The letter dated September 24, 2012, was titled *Draft EIR Comments of New-Old Ways Wholistically Emerging.* This letter included two exhibits (Exhibits A and B) from Raymond Waldbaum, The Engineering Geologist, dated September 5, 2012 and September 12, 2012. For purposes of nomenclature in this Response to Comments Document, this letter and its two exhibits are referred to as Comment Letter E, Exhibit E.A, and Exhibit E.B, respectively. All substantive comments raised in Comment Letter E, and Exhibits E.A and E.B are responded to in this Response to Comments Document. The copy of Comment Letter E, and Exhibits E.A and E.B are included preceding this response (excluding the appendices to E.A and E.B, which are not relevant to the adequacy of the Draft EIR, and consequently, which are included in Appendix E, as Exhibit E.A Appendix and Exhibit E.B Appendix at the end of this Response to Comments Document).

Comment Letter E also included eight attachments. Attachments 1 through 7 (referred to as Attachments E.1 through E.7, respectively, in this Response to Comments Document) consist of comment letters, correspondence, studies, and other miscellaneous information, all of which have been previously submitted by the commenter to the County, and all of which pre-date the Notice of Preparation (NOP) and the Draft EIR. Much of this re-submitted information is in relation to prior proposals that are no longer pending, on environmental review documents that have been superseded, and/or are duplicative. As relevant, these prior submittals of information were previously considered by County staff in the context that they were made. In some cases, where deemed warranted, County staff has since required further studies or peer review in response to the commenter's pre-Draft EIR submissions, and/or the Project applicant has since revised certain elements of its Project description; this relevant new Project information and analysis are reflected in the Draft EIR. A copy of Attachments E.1 through E.7 are included in Appendix E at the end of this Response to Comments Document.

Attachment 8 consists of the commenter's response to the NOP, dated March 28, 2012, titled *EIR Scoping Comments of New-Old Ways Wholistically Emerging.* This letter and its Exhibits A through N are referred to in this Response to Comments Document as Comment Letter F, and Exhibits F.A through F.N, respectively. All substantive comments raised in Comment Letter F and its exhibits are responded to in this Response to Comments Document. Please see Comment Letter F for a copy of this letter and its exhibits, and the responses prepared.

In summary, all of the comments submitted by the commenter have been carefully considered and evaluated with respect to whether they present significant environmental points relevant to the proposed Project and the alternatives to the proposed Project considered in the Draft EIR. The table below, provides a summary of letter and attachments, including a reference for how each letter component is referred to in the Response to Comments Document, a description of each letter component (author, description and date), and the status of each (i.e., whether the submittal is new, a re-submittal that pre-dates the NOP and Draft EIR, or was previously submitted in response to the NOP). See also response to Letter F, which provides a similar summary table for that submittal.

TABLE E-1
SUMMARY OF COMMENT LETTER E

Letter Reference Used In Response to Comments Document	Submittal	Author	Description	Date	Status of Each Submittal
E	Letter	Stephan C. Volker	*Draft EIR Comments of New-Old Ways Wholistically Emerging*	9/24/12	New
E.A	Exhibit A	Raymond Waldbaum, PG, CEG	*Engineering Geologic Review of RHG Responses to Cotton Shires & Assoc. Geotechnical Review of Proposed Rainwater Tanks*	9/5/12	New
E.B	Exhibit B	Raymond Waldbaum, PG, CEG	*Geologic Review of EIR Comments Regarding Water Availability*	9/12/12	New
E.1	Attachment 1	Stephan C. Volker	Comment Letter pre-dating publication of 2009 Recirculated Draft IS/MND for Henry Cornell Winery	10/08/09	Re-submittal
	Exhibit A	National Marine Fisheries Service	Comment Letter on prior version of Henry Cornell Winery project	6/7/05	Re-submittal
	Exhibit B	RGH Consultants, Inc.	*Preliminary Geologic Study Report*	4/22/08	Re-submittal
	Exhibit C	Sonoma County	2008 Draft IS/MND for Henry Cornell Winery	9/08	Re-submittal
	Exhibit D	Raymond Waldbaum, PG, CEG	*Geologic Review of Updated RGH Geologic Report in Support of Cornell Wine Factory*	11/11/08	Re-submittal
	Exhibit E	Stacey Li, Ph.D	Declaration / Comments on 2008 Draft IS/MND for Henry Cornell Winery	11/12/08	Re-submittal
	Exhibit F	Kamman Hydrology and Engineering, Inc.	*Technical Review of Henry Cornell Winery*	11/12/08	Re-submittal
	Exhibit G	California Department of Fish and Game	Comments on 2008 Draft IS/MND for Henry Cornell Winery	11/24/08	Re-submittal
	Exhibit H	Department of Water Resources	Comments on 2008 Draft IS/MND for Henry Cornell Winery	12/3/08	Re-submittal
E.2	Attachment 2	Stephan C. Volker	Volker/NOWWE comments on the 2009 Recirculated Draft IS/MND for Henry Cornell Winery	11/05/09	Re-submittal
	Exhibit 1	National Marine Fisheries Service	Comment Letter on prior version of Henry Cornell Winery project	6/7/2005	Re-submittal
	Exhibit 2	Board for Geologists and Geophysicists	*Compliance with Business and Professions Code Section 7800 et seq. (Geologist and Geophysicist Act)*	9/15/05	Re-submittal
	Exhibit 3	Kamman Hydrology and Engineering, Inc.	*Technical Review of Henry Cornell Winery*	11/12/08	Re-submittal
	Exhibit 4	D. Scott Magorien, CEG	*Review of Professional Geological Work by William V. McCormick, CEG, 1673, Case No. CG 2007-52*	3/20/09	Re-submittal
	Exhibit 5	Board for Geologists and Geophysicists	*Citation 2007-52*	4/29/09	Re-submittal

TABLE E-1 (Continued)
SUMMARY OF COMMENT LETTER E

Letter Reference Used In Response to Comments Document	Submittal	Author	Description	Date	Status of Each Submittal
E.2 (cont.)	Exhibit 6	Aquatic Systems Research	*Habitat Inventory and Initial Assessment of Anthropogenic Sedimentation of Upper Mark West Creek*	6/27/09	Re-submittal
	Exhibit 7	Raymond Waldbaum, PG, CEG	*Geologic Review of RGH Geologic Report in Response to BZA Comments, Cornell Wine Factory*	10/23/09	Re-submittal
	Exhibit 8	JR^2 Consulting, Inc.	*Review of Reports for Cornell Winery*	10/23/09	Re-submittal
	Exhibit 9	JR^2 Consulting, Inc.	*Review of Reports for Cornell Winery*	11/05/09	Re-submittal
	Exhibit 10	Raymond Waldbaum, PG, CEG	*Proposed Road Paving, Cornell Wine Factory*	11/4/09	Re-submittal
E.3	Attachment 3	Stephan C. Volker	Response to "*Statement on Behalf of Cornell Farms LLC in Support of Use Permit Application 07-008*" dated November 6, 2009	11/11/09	Re-submittal
	Exhibit 1	Paul Kieran, Regional Water Quality Control Board	Memorandum from Paul Kieran to John Short	4/18/06	Re-submittal
	Exhibit 2	Board for Geologists and Geophysicists	*Compliance with Business and Professions Code Section 7800 et seq. (Geologist and Geophysicist Act)*	7/29/05	Re-submittal
E.4	Attachment 4	Stephan C. Volker	*NOWWE Objections to Scope of Work for Geotechnical Peer Review of Cornell Winery Project (Application UPE0700008)*	2/10/10	Re-submittal
E.5	Attachment 5	Stephan C. Volker	Comments on February 2010 PRMD Staff Report	2/24/10	Re-submittal
E.6	Attachment 6	Stephan C. Volker	*NOWWE Response to Commissioners' Questions Regarding Groundwater Availability Testing Procedures for Cornell Winery Project*	3/31/10	Re-submittal
E.7	Attachment 7	Stephan C. Volker	Comments on the 2010 Draft IS/MND for the Henry Cornell Winery	9/21/10	Re-submittal
F	Attachment 8 Letter and its Exhibits A through N	Stephan C. Volker, et al.	Response to Notice of Preparation; please see Letter F for detail	3/28/12	Response to NOP

Responses to Letter E

E-1 The commenter notes that, as set forth in scoping comments provided in response to the NOP for this EIR, Mark West Creek is in a degraded condition, and that the creek's coho salmon and steelhead trout fisheries have declined.

The commenter's scoping comments are attached to this comment letter and responded to below, as indicated in the Summary of Comment Letter E table, above. Regarding the current condition of Mark West Creek and its salmonid fishery, these are discussed in the Draft EIR in Section IV.C, Hydrology and Water Quality (setting section and Impacts C.1 through C.6), and in Section IV.D, Biological Resources (setting section and Impacts D.3, D.6 and D.12).

E-2 The commenter makes a general comment that asserts that the Project would further degrade the conditions described in Comment E-1. The Draft EIR concludes otherwise, as demonstrated in Impacts C.1 through C.6, and Impacts D.3, D.6 and D.12. Please also see response to comments that follow in this Letter E and Letter F.

E-3 The commenter indicates the scoping comment addressed analysis of the Project's hydrological, biological and traffic impacts, geotechnical deficiencies, and deferred mitigation measures, and that these comments were mostly ignored.

This is incorrect. All substantive scoping comments made in response to the NOP were appropriately considered prior to preparation of the Draft EIR. Furthermore, the commenter's scoping comments made in response to the NOP is included as Letter F in this Response to Comments Document, and consequently, all substantive comments in Letter F are responded to directly in this document. Similarly, many of those scoping comments are repeated in Letter E in the Response to Comments Document, and all substantive comments raised in Letter E are responded to directly. Please see also the Introduction to responses to Letters E and F for additional detail.

E-4 The commenter indicates it incorporates its scoping comments by reference into its comment letter on the Draft EIR, and requests that each and every statement in its scoping comments be separately responded to in full as part of its comment letter on the Draft EIR. The commenter notes that NOWWE's scoping comments themselves incorporated the previous comment letters by NOWWE regarding this Project.

Please see the Introduction to the responses to Letter E, above, and the Introduction to the responses to Letter F for a discussion of how all of the comments submitted by the commenter have been carefully considered and evaluated with respect to whether they present significant environmental points relevant to the proposed Project and the alternatives to the proposed Project considered in the Draft EIR.

E-5 The commenter claims the Draft EIR fails to address the issues outlined in the commenter's scoping comments. The Draft EIR does not fail to address the commenter's scoping comments. Please see responses to Comments E-3 and E-4, above.

The commenter also claims the Draft EIR unlawfully omits crucial studies, thereby preventing meaningful public review. Please see response to Comment E-32, below, for a response to this comment.

E-6 The commenter asserts that the Draft EIR abruptly drops the planned conservation easement mitigation measure, rejecting the most environmentally beneficial alternative without adequate explanation. Please see response to Comment E-61, below, for a response to this comment.

E-7 The commenter asserts that the EIR fails to adequately analyze cumulative effects of the Project, when combined with reasonably foreseeable future development. Please see Master Response CUM-1 in Chapter II in this Response to Comments Document.

E-8 The commenter asserts that addressing the issues raised in the comments will result in the addition of significant new information to the EIR, and as a result, the County must recirculate the Draft EIR for additional public review.

The commenter is referred to all responses to comments to Letters E and F which demonstrate that the Draft EIR meets all applicable standards of adequacy under CEQA, and further, that recirculation of the Draft EIR is not necessary.

E-9 The commenter claims the analysis of hydrological impacts is inadequate, and that the commenter's prior scoping comments noted five overarching deficiencies in past analyses of the Project's hydrological impacts. For the first hydrological issue raised by the commenter, please see response to Comment E-10, below. For the second hydrological issue raised, please see responses to Comments E-11 through E-14, below. For the third hydrological issue raised, please see responses to Comments E-15 to E-24, below. For the fourth hydrological issue raised, please see responses to Comments E-25 and E-26. For the fifth hydrological issue raised, please see responses to Comments E-27 and E-28. The commenter also asserts the Draft EIR failed to consider cumulative hydrological impacts of the Project. Please see responses to Comments E-29 through E-32.

As discussed in response to Comment E-3, above, the commenter's scoping comments made in response to the NOP are included as Letter F in this Response to Comments Document, and consequently, all substantive comments in Letter F are responded to directly in this document.

E-10 The commenter claims the Draft EIR fails to account for water use of both the vineyard and the winery. The commenter is referred to responses to Comments F-3, F-4, and F-5.

E-11 The commenter claims the planned water storage tanks are inadequate to mitigate the impact of the Project's water use on Mark West Creek. The commenter elaborates on this comment in Comments E-12, E-13, and E-14; please see responses to Comments E-12 through E-14, below.

E-12 The commenter claims that the Project landscaping water use estimates presented in the Draft EIR must account for seasonal variability of rainfall. The commenter asserts that, if a warm and dry spring would occur under the Interim Project condition (first three years of Project) and result in a potential increase in the Project interim landscaping water demand above that estimated in the Draft EIR, that this would negate the net 7,000 gallon per year water use reduction the Draft EIR estimates would occur with the Project, and instead result in a net increase in Project water use.

However, the Project's landscaping water use estimates presented in the Draft EIR were conservatively developed by the Project applicant's landscaping consultant, and are considered a maximum landscaping water use. As indicated in Footnote 14 on page IV.C-27 of the Draft EIR, a worst-case 34-week landscape irrigation schedule was assumed (i.e., from March 15 to November 15) during each of the three Interim Project condition

years, instead of a traditional 26-week landscape irrigation schedule (i.e., April 15 to October 15). This conservative assumption accounts for the possibility, albeit unlikely, of three consecutive years with an extended dry season. Please also see response to Comment E-13, below.

E-13 The commenter asserts that the Long-Term estimates of landscaping water use were estimated to be 25 percent of the Interim estimates, without explanation.

While the Project's final plant list is not yet determined, the Project applicant's landscape consultant's estimate that Long-Term landscaping irrigation would be 25 percent of the Interim estimate presented in the Draft EIR is based on several conservative assumptions. First the Project applicant's landscape consultant estimates that approximately 75 percent of the proposed landscaping plantings would be very low water use (e.g., oaks, manzanitas, buckwheat, select bunch grasses, coyote brush and sage), and consequently, would not require supplemental irrigation following the initial 3-year Interim Project landscaping condition. Approximately 15 percent of the proposed landscaping plantings [primarily amongst the insectary plantings (i.e., those plants that attract insects) and those plantings within the winery courtyard] would be low water use flowering perennials such as penstemon and currants that would only require some supplemental water in the summer months to maintain a healthy appearance. The proposed rain garden plantings, which would comprise approximately 5 percent of the proposed landscaping plantings, would also be low water use and also require supplemental irrigation in the summer. Finally, it is estimated that there would be approximate 5 percent mortality among the very drought tolerant plantings (as identified by the landscaping consultant) that would need to be re-established.

Using these assumptions, a maximum water use scenario (assuming a worst-case 34-week landscape irrigation schedule) for Long-Term Project conditions can be represented as follows:

Long-Term Project Annual Water Use	Amount (gallons)
Rain Garden - Low Water Use: (136 plants x 1 gal/wk x 34 weeks)	4,629
Insectary and Winery Courtyard - Low Water Use: (408 plants x 1 gal/wk x 34 weeks)	13,888
5 Percent Mortality	4,629
Total	23,146

SOURCE: Prunuske Chatham, 2012

The commenter also claims the rain harvesting area estimate of 23,250 square feet (sf) is unsubstantiated and is nearly four times the size of the winery itself. The commenter incorrectly assumes the rainwater harvest area only includes the rooftops of the Project buildings. However, as described in Chapter III, Project Description, the rainwater harvest area would include the winery building roofs, apron between the winery

buildings, and tank pads. The specific rainwater harvest component areas are estimated by the Project applicant's engineer as follows:

Rainwater Harvest Area Component	Area (sf)
Winery and Production Building Roofs	6,919
Apron	6,043
Terrace	904
Upper Tank Pad	7,701
Pumphouse Roof at Upper Tank Pad	266
Hard surface at Rainwater Storage Tank Pad[a]	1,414
Total	23,247

[a] The rainwater storage tank pad is actually 2,848 sf, but only the hard surface area of 1,414 is accounted for in this estimate.

SOURCE: Atterbury and Associates, 2012

The commenter claims the Draft EIR ignores environmental consequences, including substantial erosion, that could result from an overflow of the collection system. For a response to this claim, the commenter is referred to response to Comment F-9.

E-14 The commenter disagrees with the Draft EIR's conclusion that the Project would reduce the existing annual groundwater pumped at Cornell Farms, and consequently, the annual demand on the aquifer, claiming that it ignores that rainwater that is harvested is prevented from infiltrating into the aquifer. The commenter claims there is no substantial differences between pumping a gallon of groundwater and harvesting a gallon of water that would otherwise become groundwater. The commenter then cites an excerpt from the National Marine Fisheries Service September 12, 2012 comment letter (in Comment B-5 in Comment Letter B). For a response to the assertions made, the commenter is referred to response to Comment B-5.

E-15 The commenter asserts that the Draft EIR fails to adequately consider the environmental consequences of the Project's groundwater pumping, and that the Project would indirectly draw water from Mark West Creek during the dry months. The commenter is referred to the responses to Comments E-16 through E-24, below, and responses to Comments F-12 through F-28.

E-16 The commenter asserts that the applicant's 2006 groundwater availability study is subpar for the reasons stated on pages 6-7 of their scoping comments. For responses to those scoping comments, please see responses to Comment F-13 to F-16; see also Master Response HYD-1 in Chapter II in this Response to Comments Document.

The commenter refers to Impact C.5 in the Draft EIR, and claims the Draft EIR asserts that the overall amount of water that would be withdrawn from Mark West Creek from the Project is de minimus when compared to the overall amount of water in the entire watershed. The Draft EIR characterized the amount of rainwater that would be harvested as a percentage of the North Watershed [which the National Marine Fisheries Service (NMFS) indicated was an appropriate scale of comparison in their comment letter on the

Draft EIR]. The Draft EIR notes that Project rainwater harvesting would represent about 0.01 percent of the total annual flow volume in the North Watershed and about 0.03 percent of the total annual dry year flow volume in the North Watershed. This would not be expected to have a discernible effect on the surface flows in Upper Mark West Creek. Please see response to Comment B-6 for additional detail related to the comparison of proposed rainwater harvesting to the larger Upper Mark West watershed.

The commenter quotes an excerpt from a comment from NMFS in their comment letter on the Draft EIR. Please see response to Comment B-7 for a response to this comment.

E-17 and E-18 The commenter asserts the Draft EIR failed to require completion of a constant rate aquifer test, and that such test is required to evaluate potential impacts from Cornell Farms groundwater withdrawals on local-area water resources, and in turn, ecological conditions sustained in dry-season, groundwater-fed baseflow in the Northern and Southern drainage area creeks. The commenter asserts the Draft EIR conclusions are of limited value without information provided by a constant rate aquifer test. Please see Master Response HYD-1 in Chapter II in this Response to Comments Document.

E-19 The commenter claims the Project fails to comply with the Sonoma County Groundwater Checklist in addition to Sonoma County General Plan Water Element Policy WR-2e. Please see Master Response HYD-1 in Chapter II in this Response to Comments Document.

E-20 The commenter asserts the reasons for not requiring a constant rate aquifer test are inadequate, and claims the Draft EIR indicates a constant rate aquifer test would be too difficult and expensive. Contrary to the commenter's claim, the Draft EIR makes no reference to costs being too expensive. Please see response to Comment HYD-1 in Chapter II, in this Response to Comments Document.

E-21 The commenter references a Draft EIR statement that a constant rate aquifer test was not performed because no suitable wells exist for such test, and the nature of the fractured bedrock makes placement of two wells within the same aquifer unit problematic. The commenter indicates this does not mean that new wells cannot be drilled, and requests a reference or citation for the latter statement. Please see response to Comment HYD-1 in Chapter II, in this Response to Comments Document.

The commenter also asserts that the Draft EIR claims that it is technically infeasible to complete a constant rate aquifer test. The Draft EIR makes no such claim. Please see response to Comment HYD-1 in Chapter II, in this Response to Comments Document.

E-22 The commenter indicates that Sonoma County General Plan Policy WR-2e requires test wells be established in Class 4 water areas. Please see response to Comment HYD-1 in Chapter II, in this Response to Comments Document.

E-23 The commenter indicates that technology exists to drill through the most difficult formations and the only issue is cost. The commenter adds that Sonoma County specifically requires evidence of groundwater availability for projects in Zone 4 areas, like the Project. The commenter asserts that to exempt this site from the completion of a constant rate aquifer test on the basis of problematic fractured bedrock would have the practical effect of exempting all projects in Zone 4 areas. Please see response to Comment HYD-1 in Chapter II, in this Response to Comments Document.

E-24 The commenter states that the Project would increase groundwater withdrawal, with adverse consequences for streamflow. Please see the responses to Comments E-29, E-42 and F.F-7, below.

E-25 The commenter asserts the Draft EIR's analysis of impacts of the Project's runoff is inadequate. The commenter indicates the Draft EIR fails to quantify the amount of runoff that the Project would generate. Other comments raised elsewhere in Comments Letters E and F assert the Project would increase untreated and treated stormwater runoff to the freshwater pond at the 100 Wappo Road; and that the planned erosion control measures would be ineffective.

As described in the Draft EIR, page IV.C-16, the Project is located within the boundary of Phase I Municipal Separate Storm System (MS4) permits administered by the North Coast Regional Water Quality Control Board via the National Pollutant Discharge Elimination System (NPDES) permit. Accordingly, the Project stormwater system would be designed pursuant to the 85th percentile 24-hour storm, as required by the MS4 permit. The applicant's engineer would be required to quantify the estimated stormwater runoff to conform to the Phase I MS4 permit and finalize the design of the stormwater system. To comply with the Phase I MS4 permit, the applicant must also incorporate Low Impact Development (LID) Best Management Practices (BMPs) into the Project to mimic the predevelopment site hydrology infiltration, interception, reuse, and evapotranspiration, as well as reduce potential impacts to water quality.

The proposed stormwater collection system was described in Chapter III, Project Description, and further discussed in Impact C.1 in the Draft EIR. Rainwater not collected by the proposed rainwater harvesting system would flow to proposed storm drains and culverts, natural drainages, or infiltrate into the ground. The stormwater collection system includes a number of drop inlets installed within the winery site where stormwater would be collected, and routed through pipes to vegetated rock diffusers for stormwater energy dissipation. Furthermore, a number of stormwater improvements are proposed along Wappo Road, including rain gardens and vegetated buffers to collect and treat stormwater runoff, and crushed rock shoulders for stormwater energy dissipation. These features would be consistent with LID BMPs as recommended by the RWQCB to reduce runoff, control sedimentation and maintain pre-existing hydrology and water quality.

In addition, the Project applicant's geotechnical engineer identified a number of recommendations in their geotechnical study report for addressing potential effects of surface water runoff from upgradient slopes, including erosion. These recommendations served as the basis for Mitigation Measure B.4 in the Draft EIR Geology, Soils and Seismicity section for addressing potential Project erosion effects from Project stormwater runoff. Mitigation Measure B.4 requires that these recommended erosion controls be incorporated into the final Project design plans and that the controls shall become part of the Project.

The regulatory requirements described above, along with the stormwater collection and control features proposed as part of the Project and identified in mitigation in the Draft EIR, would ensure stormwater runoff effects of the proposed Project, including potential stormwater runoff volumes increases and potential increases in erosion and sediment delivery, would be less than significant.

E-26 The commenter claims that the Draft EIR defers formulation of mitigation measures, citing Mitigation Measure B.4 in the Draft EIR. The commenter is referred to response to Comment F-65.

The commenter also asserts that the proposed rain gardens and vegetative buffers could themselves have significant impacts and are unlikely to reduce Project impacts. All improved portions of Wappo Road would be designed to direct storm water to the vegetated buffers, rain gardens, or natural vegetated surface to promote infiltration. As described on page IV.B-26 of the Draft EIR, the proposed rain gardens would be placed on 2:1 to 3:1 slopes keyed with large boulders and underlain by 1.5 feet of bioretention soils and up to 6 feet of Class III permeable gravel. This design would enhance deep infiltration to rates over current conditions, thereby reducing the potential for local saturation and soil failure. Proposed vegetated buffers would similarly be installed on gentle slopes and would promote infiltration.

The commenter also asserts the development of the wastewater disposal pipeline could result in erosion effects. The commenter is referred to response to Comment E-54, below.

E-27 The commenter claims the Draft EIR's analysis of process wastewater disposal is deficient. Specifically, the commenter asserts that since uphill pumping of the process wastewater would occur, the possibility of pump failure, through electricity shortages or otherwise, should be acknowledged. The commenter also asserts that the possibility of pump failure used to lift domestic wastewater was also ignored.

Project winery process water and domestic water sources would each be pumped uphill from separate 810-gallon pump tanks, with each tank containing dual alternating pumps. If a pump were to fail, the operator would be alerted by an alarm, however, the remaining working pump on the tank would continue to pump the wastewater until such time the other pump was repaired. In the unlikely event that both pumps on a tank failed, the operator would also be alerted by a high-water alarm when less than 200 gallons of

capacity remain in the pump tank, and if needed the winery would cease operations until such times both pumps on the subject tank were returned to operation. It should also be noted that all pumps would have individual check valves on the discharge side that would prevent any potential backflow of winery process water or domestic wastewater when the pump is not operating.

E-28 The commenter asserts that the capacity of the aerobic package treatment plant was not disclosed in the Draft EIR, and the possibility of overflow was overlooked.

Final design details of the proposed aerobic package treatment plant are not available from the Project applicant at this time, however, the Draft EIR Project Description (page III-19) discloses the capacity of the proposed treated process water storage tank is 46,000 gallons. This capacity is nearly half the total estimated volume of treated process water that would be generated on an annual basis. As such, this tank capacity can easily accommodate the monthly process water generated at the winery without possibility of overflow.

E-29 The commenter asserts that the conclusion of a less-than-significant cumulative hydrologic impact in the Draft EIR is based "…solely on the allegedly de minimis nature of the withdrawals in the context of the broader aquifer."

This statement, however, is incorrect. As clearly described in the discussion of Impact C.6 of the Draft EIR, the cumulative hydrologic impact analysis is a two-step process. The first step is to determine whether a cumulative impact exists in the Project vicinity. The Draft EIR finds that, based on records of diminishing streamflow in Upper Mark West Creek, a cumulative impact does exist; the Draft EIR links this impact to the cumulative effects of past development in the Upper Mark West watershed, including, but not limited to, Cornell Farms vineyards. This in itself does not constitute a significant impact of the Project, but rather provides context for the second step in the cumulative impact analysis, which is to determine whether the Project would make a cumulatively considerable contribution to this impact. The basis for the determination of whether the Project would make a cumulatively considerable contribution to the cumulative impact is found in the discussions of Impact C.3, which examines the potential for the Project to diminish dry season base flow to Mark West Creek through proposed groundwater pumping and rainwater harvest; and Impact C.5, which examines whether proposed rainwater harvesting could more directly result in the reduction of flows in Mark West Creek.

As discussed in detail under Impact C.3, 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, since harvested rainwater and treated winery process water would to some extent displace existing use of the supply well for vineyard irrigation; the decrease in Project supply well demand is shown in Table IV.C-5. Furthermore, as shown in Table IV.C-4, no groundwater pumping to

supply the winery would occur during the crucial dry months of August, September and October; also, during the dry season, the Project would supply harvested rainwater and winery process water to the vineyard, which would reduce the demand on groundwater for vineyard operations during the dry season. Since the Project would reduce annual demand on groundwater, as well as dry season demand on groundwater, Project demand on groundwater would not reduce streamflow in Mark West Creek. Therefore, Project demand on groundwater would not make a contribution to the cumulative impact on streamflow in the Upper Mark West watershed.

Impact C.5 discusses the potential effects of proposed rainwater harvesting on surface flow in Mark West Creek. The impact discussion includes a calculation of the reduction in surface runoff from rainwater harvesting, and finds that the 140,000 gallons of harvested rainwater per year equals 0.00046 percent of the total average annual flow volume in the Upper Mark West watershed, and about 0.001 percent (one one-thousandth of one percent) of the total annual dry year flow volume in the watershed. This would not be expected to have a discernible effect on the annual surface flows in Upper Mark West Creek. The area from which rainwater would be harvested totals an estimated 23,250 square feet, or about one half acre. This represents about 0.06 percent of the 934-acre North Watershed, from which rainwater would be harvested. Therefore, during storm events when runoff occurs and rainwater is being harvested, peak flows from the North Watershed would be reduced by no more than 0.06 percent. It should be noted that this would not be expected to have a discernible effect on peak flows in Upper Mark West Creek. County staff does not consider this effect to be cumulatively considerable.

In addition, as discussed in the response to Comment B-5, the harvesting of 140,000 gallons of rainwater per year would be expected to reduce annual groundwater recharge by about 5,600 gallons. This figure is lower than the reduction in groundwater demand calculated for the Project (please see Table IV.C-5 in Section IV.C, Hydrology and Water Quality): even with the reduction in groundwater recharge due to rainwater harvest, the Project is expected to increase groundwater recharge, relative to existing conditions. Therefore, the cumulative effects of proposed rainwater harvest on annual surface flows and peak flows in Mark West creek are determined not to be cumulatively considerable.

E-30 Comment E-30 asserts that the Draft EIR inadequately characterizes potential future developments in the vicinity of the Project site in the cumulative analysis, and states that the EIR must, "…address any and all reasonably foreseeable future developments," and that the Draft EIR is flawed, because, the commenter asserts, it does not include either a list of cumulative projects or a summary of projections upon which the cumulative analysis is based.

The commenter's allegations are unfounded; please see Master Response CUM-1 in Chapter II in this Response to Comments Document.

E-31 This comment, similar to Comment B-9, asserts that the Draft EIR relies upon the findings of the SWRCB water rights investigation to reach the conclusion that the Project

would have a less-than-significant hydrologic effect. This however, is not the case. Please see the response to Comment B-9. In addition, please see the response to Comment E-29.

E-32 The commenter claims the Draft EIR did not include a cited study in the Draft EIR or as an appendix. The study the commenter refers to is cited as "Grantham, et. al., 2012" on page IV.C-35 of the Draft EIR; the full reference identified in the References on page IV.C-36 of the Draft EIR is "Grantham, Theodore E.; Newburn, David A; McCarthy, Michael A.; and Merelender, Adina M., 2012. *The Role of Streamflow and Land Use in Limiting Oversummer Survival of Juvenile Steelhead in California Streams*, Transactions of the American Fisheries Society, May 4."

The commenter also claims other important studies were also omitted, including geotechnical studies referenced in Section IV.B, Geology, Soils and Seismicity. There are several Project applicant geotechnical studies referenced in Section IV.B in the Draft EIR, including from RGH Consultants (2008, 2009, 2010, 2011, 2012) and Condor Earth Technologies (2011, 2012).

Prior to publication of the Draft EIR, a copy of all relevant references in the Draft EIR, including the Grantham, et al. reference and all relevant geotechnical studies, were made available for review at the Sonoma County PRMD office at 2550 Ventura Avenue, Santa Rosa.

E-33 The commenter asserts that the Draft EIR's analysis of biological impacts is inadequate, and indicates that there are five analytical deficiencies, as specified in Comments E-34 through E-45. The commenter is referred to responses to Comments E-34 through E-45.

E-34 The commenter asserts that the biological inventories that were conducted were inadequate, specifically that the seasonal timing of surveys were inappropriate; systematic bat and terrestrial surveys were not conducted; nesting bird surveys were improperly timed, occurring at the wrong time of year and wrong time of day; and the size of the buffer zones is inadequate. The commenter indicates that follow-up tests should have been performed, but were not.

Please see Master Responses BIO-1, BIO-3 and BIO-5 in Chapter II of this Response to Comments Document.

E-35 The commenter asserts that the proposed mitigation for special-status plant species is inadequate, controversial and unproven, and that the EIR mitigation requires future development of a five-year mitigation plan whose specific contents are unknown.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

E-36 The commenter asserts that there is no scientific basis for the Draft EIR's view that transplantation is an effective means of mitigating the impacts to the rare native plants found on-site, and that transplantation is risky and ineffective. The commenter also

indicates the Draft EIR includes no detail about its reliance on the mitigation by transplantation of narrow-anthered California brodiaea, and that the mitigation plan has not been developed.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

E-37 The commenter asserts that the Draft EIR omits discussion of the narrow-anthered California brodiaea that, the commenter asserts, were destroyed by the applicant between the submittal of the Project proposal and the completion of the Draft EIR; and that the applicant's removal of the brodiaea constitutes an unlawful pre-approval of the Project.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

E-38 The commenter asserts that the Project's impacts on special-status animals, including the northern spotted owl (NSO) and numerous special-status bats, is inadequate.

Please see Master Responses BIO-1, BIO-3, BIO-4 and BIO-5 in Chapter II of this Response to Comments Document.

E-39 The commenter asserts that the Draft EIR bases its conclusion that the NSO does not require mitigation on a misinterpretation of U.S. Fish and Wildlife Service (USFWS) requirements, and the effective harassment zone may be on the order of 300 to 500 meters. The commenter states that, given that the proximity of one NSO territory is 1,900 feet from the Project, the Project could affect this protected species. The commenter adds that the locations and status of each NSO within a 1.3-mile radius of the Project site should be evaluated during each year of construction activity.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

E-40 The commenter asserts that the Draft EIR ignores the dusky-footed woodrat, which the commenter indicates is a primary prey base of the NSO, that the dusky-footed woodrat utilizes habitat on-site, and that nearby owls may venture on-site to prey upon these rodents.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

E-41 The commenter asserts that the Draft EIR proposes to complete bat surveys after approval to determine whether protected bats are present, and conditionally requires development of a mitigation plan without specific terms to protect bat species.

Please see Master Response BIO-5 in Chapter II of this Response to Comments Document.

E-42 The commenter claims that the Draft EIR avoids analysis of Project impacts on salmonids, stating that the Project would affect streamflow and stream sedimentation, and that the EIR preparers ignored comments submitted in response to the NOP.

The commenter's allegations are unfounded. The Draft EIR examines potential Project impacts to coho salmon, steelhead, and river lamprey in Impact D.6 in Section IV.D, Biological Resources, and, based on substantial evidence and objective analysis, finds the impact to be less than significant. As thoroughly discussed in Impacts C.3, C.4, and C5 the Project would not increase demand on groundwater, and would not divert a substantial amount of stormwater through rainwater harvest; therefore the Project would not result in reduced streamflow in Mark West Creek. Please see also the response to Comments B-5 and E-29. As discussed in the Draft EIR in Impacts B.4 and B.7 in Section IV.B, Geology, Soils, and Seismicity; and in Impacts C.1 and C.6 in Section IV.C, Hydrology and Water Quality, through adherence to regulatory requirements for reducing construction-related erosion and sedimentation, and through implementation of proposed design features intended to reduce ongoing erosion and sedimentation after the Project is constructed, the Project would not adversely affect water quality in Mark West Creek. For these reasons, the Project would not reduce streamflow or increase sedimentation in Mark West Creek, and would not have a deleterious effect on the fishery. It is noted that the studies cited in this comment (which are attached to Letter E and responded to as individual comments, below), were prepared prior to preparation of the Draft EIR, and were submitted as scoping comments (i.e., comments on the NOP). These studies were thoroughly reviewed and considered during preparation of the Draft EIR. However, these comments do not address the analysis or impact conclusions contained in the Draft EIR.

E-43 The commenter again asserts that the Project would result in decreased streamflow, increased sedimentation, and resulting deleterious effects on aquatic habitat; and that the Draft EIR ignores scoping comments regarding these concerns. Please see the responses to Comments B-5, B-9, E-29, E-30, and E-42.

E-44 The commenter asserts that the Draft EIR unlawfully defers the formulation of many biological resource mitigation measures, including the mitigation identified for the narrow-anthered California brodiaea, sensitive natural communities, special-status birds, and special-status bats.

Please see Master Responses BIO-3, BIO-5 and BIO-6 in Chapter II of this Response to Comments Document.

E-45 The commenter concludes comments regarding biological resources by making a general comment that the Draft EIR fails to rectify past errors in identification of the Project's impacts; fails to provide specificity about mitigation measures; and does not contain a cumulative analysis. The commenter is referred to responses to Comments E-33 through E-44, above, for how the commenter's specific comments on the Draft EIR analysis of biological impacts are addressed.

E-46 The commenter asserts that the Draft EIR's analysis of the Project's geology, soils and seismicity impacts is inadequate; that the Draft EIR mostly fails to respond to the commenter's expert testimony; and that the limited new study that was conducted on one issue is inadequate. The commenter indicates these deficiencies fall into four main areas.

For the first area raised by the commenter, please see response to Comment E-47, below. For the second area raised by the commenter, please see responses to Comments E-48 through E-50, below. For the third area raised by the commenter, please see responses to Comments E-51 through E-54, below. For the fourth area raised by the commenter, please see responses to Comments E-55 through E-56, below.

E-47 The commenter asserts that the Draft EIR does not adequately analyze slope stability at the site of the winery building. The commenter claims the report upon which the Draft EIR relies for its analysis has numerous methodological deficiencies, including but not limited to the absence of any large-diameter borings, and the failure to complete a comprehensive slope stability analysis. The commenter also claims the geologic mapping necessary to determine the precise boundaries of the landslides present on the Project site have never been conducted. The commenter also claims that the Draft EIR, like the studies upon which it is based, ignores the possibility that the landslides will enlarge in an upslope direction, which could consume the winery building.

Please see Master Response GEO-1 in Chapter II of this Response to Comments Document.

E-48 The applicant asserts the geotechnical analysis of the proposed rainwater storage tanks is inadequate. The commenter claims the geological map prepared by the applicant's geotechnical consultant, RGH, does not contain data indicating the geologic structure underlying the proposed tank site. The commenter asserts that the limited cross sections that were produced exclude information regarding the orientations of the encountered materials. The commenter also asserts that the proposed method of creating the tank pad, construction of high retaining walls, and placement of soil backfill, will add surcharging weight to the slope upon which the tanks will be placed, which has the potential to reduce slope stability.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E-49 The commenter asserts that the applicant's geotechnical consultant relied on inadequate and improper data, including only two aerial photographs, and improperly relied on CDMG Special Report 120 to provide information about actual rather than apparent landslides.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E-50 The commenter raises issues related to the commenter receiving a citation. These comments do not address the adequacy of the Draft EIR; consequently, no response is required.

E-51 The commenter asserts that the siting of the proposed leachfield is likely to cause significant environmental impacts.

Please see Master Response GEO-3 in Chapter II of this Response to Comments Document.

E-52 The commenter asserts that the Draft EIR does not discuss the possibility that nearby wells may draw effluent from the leach field.

Please see Master Response GEO-3 in Chapter II of this Response to Comments Document.

E-53 The commenter asserts that the leach field has not been shown to be geotechnically stable. The commenter asserts that the leach field site is underlain by landslides, and is located above steep and unstable slopes. The commenter indicates past landslides in the area have been triggered by improperly sited leach fields. The comments asserts that the Draft EIR should be revised and recirculated to account for these unstable slopes and to quantify precisely the likelihood of slope failure.

Please see Master Response GEO-3 in Chapter II of this Response to Comments Document.

E-54 The commenter asserts that the Draft EIR ignores impacts associated with the proposed construction of the 3,000-foot pipeline that would extend to the proposed leachfield.

Standard construction practices would be required for the installation of the proposed 3,000-foot pipeline. The Project applicant anticipates using a combination of controlled density fill (CDF) and soil backfill. CDF is a flowable mix of aggregate and cementitious materials that provides compressive strength and self compacts upon backfilling placement. Use of standard construction practices and materials would ensure there would be no adverse effects from truck travel over a properly backfilled trench.

Impacts B.4 and C.1 in the Draft EIR addresses the potential effects related to erosion related to all aspects of construction, including pipeline construction. The Project construction activities, including the proposed pipeline installation, 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 construction associated with activities would require a Stormwater Pollution and Prevention Plan (SWPPP) which would include BMPs to control erosion and the potential for sediment and other pollutants from leaving the Project construction site.

E-55 The comment states that the Draft EIR does not adequately analyze seismic risks and does not discuss the environmental consequences of using side hill fills, which the commenter claims can fail in an earthquake.

The seismic characteristics of the Project site and region are discussed in the Draft EIR pages IV.B-5 through IV.B-11. The environmental setting provides details of the active and potentially active faults that may impact the site, clearly describes the earthquake parameters such as intensity and magnitude, and presents a background on historic seismicity and the current understanding in the scientific community as to the probabilities of the next earthquake. The seismic hazards section of the Draft EIR, pages IV.B-13 through IV.B-15, describes the risks of potential seismic ground shaking, liquefaction, and slope instability associated with the Project site. The impact analysis in the Draft EIR (Impact B.1) page IV.B-20 acknowledges the earthquake hazard on the Project site and concludes that, while it is possible that the Project site would experience at least one earthquake during the operational life of the proposed winery, the risk of substantial damage is low because the Project is required to conform to the seismic design criteria set forth by the 2010 California Building Code and the proposed winery and tanks sites would be sited on stable sandstone bedrock, which attenuates seismic waves, thus reducing seismic risk.

Based on review of the proposed Project plans and geotechnical recommendations, the Draft EIR did not find that the side slope fills represent a potential environmental impact. Fills and cut and fill slopes are discussed in the Draft EIR, Impact B.2, page IV.C-23 and that discussion is based on recommendations in the applicant's 2010 geotechnical study (RGH Consultants) regarding cut and fill slopes:

> "Cut and fill slopes should be designed and constructed at slope gradients of 3:1 (horizontal to vertical) or flatter, unless otherwise approved by the geotechnical engineer in specified areas. Where 2:1 fill slopes are required, they should be constructed with the outer 10 feet of the fill slope consisting of select fill. Where steeper slopes are required, retaining walls should be used. Fill slopes steeper than 2:1 will require the use of geogrid to increase stability. Fill slopes should be constructed by overfilling and cutting the slope to final grade. Fills should be continually keyed and benched into firm, undisturbed bedrock."[17]

RGH also recommended that all creeping soils be replaced by buttressed fill and that all fills be placed to at least 90 percent relative compaction. RGH stated that compaction by use of grading equipment ("track walking") to achieve slope compaction was not acceptable for fill slope construction. RGH recommended that permanent cut slopes should be observed in the field by the geotechnical engineer to verify that the exposed bedrock conditions are as anticipated.

[17] RGH Consultants, 2010, *Geotechnical Study Report, Cornell Winery, 245 Wappo Road, Santa Rosa, California.* June 23.

Review of the RGH geotechnical analysis and proposed Project grading plans found no indication that the use of fill, including slope fills, would present a potential failure hazard under static or earthquake conditions. The fill placement measures recommended by RGH are standard geotechnical practices that increase the stability of fill slopes under static and earthquake loads. The recommendations provided by RGH would be incorporated into the final geotechnical considerations and grading plans for the proposed winery and water tank sites. Consequently, the Draft EIR did not identify any significant impacts associated with the proposed Projects fill slopes.

E-56 The comment states that the Draft EIR admits the Project was only designed to survive ground accelerations at levels that have a 10 percent probability of being exceeded in 50 years and does not discuss impacts of earthquake accelerations that exceed this threshold. The commenter also states that the Draft EIR "promises" that the buildings will remain standing through 90 percent of the earthquakes that are likely to occur in the next 50 years and ignores what would occur the remaining 10 percent of the time. The commenter asserts that the Draft EIR must acknowledge the risk of a larger earthquake, explore the impacts that would occur in such an event, and provide adequate mitigation.

As clearly explained in the Draft EIR, page IV.B-14, the seismic risk is based on the Probabilistic Seismic Hazard Assessment (PSHA) for California.[18] The PSHA considers the range of possible earthquake sources and estimates their characteristic magnitudes to generate a ground shaking probability map for California. The PSHA maps depict values of peak ground acceleration (PGA)[19] that have a 10 percent probability of being exceeded in 50 years (i.e., a 1 in 475 chance of occurring each year)**.** The PSHA considers *probability of occurrence* for particular peak ground acceleration over the next 50 years. The PSHA does not, as the commenter implies, represent the *percentage of earthquakes* likely to occur over the next 50 years or earthquakes that occur during a *percentage* of the 50-year time frame. The PSHA is a conservative probability approach that 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. Furthermore, as discussed in the Draft EIR on page IV.B-20, 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 Draft EIR appropriately uses the PSHA to assess relative earthquake risk and determined that, while earthquakes can and will occur in the region, impacts associated with ground shaking would not result in a substantial risk to public safety, and therefore, not result in a significant impact.

E-57 The commenter asserts the EIR unlawfully dismisses the Project's traffic impacts without adequate explanation, and elaborates on this comment in Comments E-58 through E-60. Please see responses to Comments E-58 through E-60, below.

18 California Geological Survey (CGS), 2003. *Seismic Hazard Shaking in California*, Available online at http://www.consrv.ca.gov/cgs/rghm/pshamap/pshamain.html, accessed on April 11, 2012.

E-58 The commenter asserts that the Draft EIR's construction traffic impact assessment is inadequate, and claims that there is no substantiation of the construction traffic estimates in Table IV.A-1. First, the commenter inquires about construction equipment trips. Construction equipment that would be used at the Project site during the construction period (e.g., excavator, loader, crane, paver, etc.) would be delivered once, remain on-site during its period of use, and then removed from the site. The Project applicant estimates approximately 19 pieces of construction equipment would be delivered to the Project site, resulting in a total of approximately 38 truck round trips over the duration of the entire construction schedule. Please see Chapter V, Errata, for acknowledgement of these construction trips in the Construction Project Vehicle Trip Generation presented on pages IV.A-3 to IV.A-5 of the Draft EIR.

The commenter also inquires about haul trips associated with the soil removal from pipeline installation, and if soil swell from excavated soil was accounted for in the truck haul trips. The Project applicant's original estimate presented in Table IV.A-1 in the Draft EIR assumed the material excavated from the pipeline trench would be used to backfill the trench, along with some import of controlled density fill (CDF) bedding, for an approximate balancing of earthwork. In response to this comment, the Project applicant has revised their estimate to assume 25 percent of soil excavated from trenchwork would be unsuitable for use as backfill, and consequently, would be hauled off-site. In addition, the Project applicant's construction estimate did not assume a soil swell factor when estimating soil quantities. As a result, the Project applicant has also revised their construction estimate to account for a 25 percent swell factor for all soil quantities, thereby increasing the associated number of haul trips. With the above-described revisions, there would be a correlating increase in total Project construction truck round trips (from 1,750 truck round trips to 2,250 truck round trips over the 18-month construction period).

It should also be noted, however, that the Draft EIR (page IV.A-5, third sentence) overestimated the number of peak daily haul trips that would occur during the two initial construction phases, identifying it as 40 daily truck round trips over a period of approximately seven weeks (rather, it should have been reported as 40 daily truck *one-way trips*, or 20 daily truck *round trips*). This overestimation is corrected by staff in this Response to Comments Document as a staff-initiated change. Consequently, when accounting for the above-described increases in total truck trips in response to comments raised, and also accounting for the staff-initiated revision for the overestimation in peak daily construction truck trips, the revised Project peak daily hauling is 24 truck round trips.[20] Consequently, the estimated peak frequency of Project construction trucks discussed under Project Construction Impacts on page IV.A-6 of the Draft EIR is also revised to one truck every ten minutes during the peak seven week construction period (from one truck every six minutes presented in the Draft EIR). The increase in total

19 Peak ground acceleration is a measure of ground motion at any particular site during an earthquake.

20 Calculated as (898 import/export and construction truck round trips in first two phases) / 37 work days = approximately 24 peak daily construction truck round trips.

Project construction truck trips, and the decrease in peak daily construction truck trips, would not change any conclusions previously reached in the Draft EIR regarding short-term construction impact effects on traffic flow, safety, and roadwear, which would continue to remain less than significant. Please see Chapter V, Errata, in this Response to Comments Document, for revisions made to the Project construction traffic discussion on pages IV.A-3 to IV.A-7 of the Draft EIR.

This estimated increase in total construction truck trips would also result in an incremental increase in annual and average daily construction air emissions, and annual construction greenhouse gas emissions. These increases, however, would not change any significance conclusions in the Draft EIR with respect to construction air impacts, which would continue to remain less than significant. Please see Chapter V, Errata, in this Response to Comments Document, for revisions made to the Project construction air quality discussion on page IV.A-9, revisions made to the Project construction greenhouse gas discussion on page IV.A-12, and revised air emission calculations in Appendix AQ of the Draft EIR.

Finally, the lower peak-period daily construction truck trips would result in correlating lower peak daily construction roadway noise levels compared to that presented in the Draft EIR, which also would remain less than significant. Please see Chapter V, Errata, in this Response to Comments Document, for revisions made to the Project construction noise discussion on page IV.A-14 of the Draft EIR.

E-59 The commenter asserts the Draft EIR fails to substantiate the statement that roadway degradation effects are generally considered for Projects that result in long-term or permanent increase in heavy truck trips, and not for short-term construction truck traffic.

As stated on page IV.A-7 of the Draft EIR, roadway pavement degrades over time due to heavy vehicles. The effect of repeated loading of the heavy vehicles is incremental (day after day) and cumulative over the approximately 20-year life span of pavement. Evaluation of roadway pavement degradation is relevant only for long-term (on-going) truck trip generation (e.g., quarry operations, lumber mills, landfills or refuse transfer stations, or industrial land uses), not for short-term construction truck traffic. The effect on pavement conditions from the Project-generated increase in truck trips on St. Helena Road would warrant detailed analysis if those trucks were to travel on the road every day for 20 years.

The commenter also asserts the Draft EIR understates the impact of as many as 40 daily truck round trips over a period of about seven weeks on traffic safety on St. Helena Road.

First, as discussed in response to Comment E-58, above, the estimated peak daily hauling is revised to 24 truck round trips (from 40 truck round trips as originally presented in the Draft EIR). Secondly, the Draft EIR presents an appropriate level of analysis and the proper impact determination for the Project-generated truck trips. As stated on page IV.A-6 of the Draft EIR, as revised in this Response to Comment Document, Project

construction traffic would be temporary, intermittent, and dispersed throughout the day, with a maximum of up to 48 one-way truck trips per day over a seven-week period (i.e., an average of approximately six trucks per hour [one every ten minutes] traveling to or from the Project site over each eight-hour work day). Comparatively fewer daily truck trips would be generated during subsequent construction phases, resulting in lower truck frequencies during those phases. That level of truck activity would not have a significant effect on traffic flow or traffic safety.

E-60 The commenter asserts the condition of approval to limit construction truck trips to off-peak traffic periods, identified in the Draft EIR, is unenforceable because it is not listed as a mitigation measure. The commenter also requests analysis of the impacts associated with this condition of approval.

Contrary to the commenter's assertion, the stipulation that off-site transport of materials and equipment to and from the Project site should be limited to off-peak traffic periods would be enforceable because it would be a County-required condition of approval, incorporated into contract specifications. Being a condition of Project approval, there is no need for it to be a formal mitigation measure in the EIR.

Regarding the impacts associated with the condition of approval to limit truck trips to the off-peak traffic period, the average frequency of truck trips would increase from one truck every ten minutes (as revised in this Response to Comments Document; see response to Comment E-58, above) to one every nine minutes (based on an off-peak period of seven hours, 9:00 AM to 4:00 PM). The typical peak traffic periods are 7:00 to 9:00 AM and 4:00 to 6:00 PM. That level of truck activity likewise would not have a significant effect on traffic flow or traffic safety.

E-61 The commenter correctly notes that the Draft EIR concludes that the No Project Alternative is the environmentally superior alternative; more specifically, the Draft EIR identifies that Alternative 1A - No Project – No Subsequent Development Alternative is the environmentally superior alternative. The commenter also correctly notes that pursuant to Section 15126.6(e)(2) of the CEQA Guidelines, among the other alternatives, Alternative 2B –Conservation Easement(s) on Cornell Farms and/or Adjacent Property is determined to be the environmentally superior alternative. The commenter then correctly quotes the second paragraph on page V-21 of the Draft EIR, which summarizes the reasons the Draft EIR finds Alternative 2B to be the environmentally superior alternative.

However, the commenter then confuses the proposed Project with Alternative 2B, and incorrectly states that the Draft EIR rejects Alternative 2B, which the Draft EIR does not. Rather, the commenter wrongly interprets the Project applicant's decision to remove the proposed Conservation Easement on the 100 Wappo Road property from its proposed Project (as discussed in the Project Description, Section III.D, Project History, page III-9) as a rejection by the Draft EIR of Alternative 2B. The Draft EIR correctly analyzes the Project currently proposed by the Project applicant, which does not include a Conservation Easement.

In Section V, Alternatives, Alternative 2B incorporates the Conservation Easement on the 100 Wappo Road parcel, as well as a potential Conservation Easement on the 115 Wappo Road parcel. The Draft EIR Alternatives section clearly states the benefits that the Conservation Easement(s) elements of Alternative 2B provide. The Draft EIR Alternatives section concludes that Alternative 2B is the environmentally superior alternative (besides the No Project Alternative).

The commenter then claims no finding of infeasibility was made, and references an excerpt from the Basis for Selection for Alternative 2B (full citation is provided here for context) that, "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." The Draft EIR makes no finding of infeasibility for Alternative 2B.

E-62 The commenter cites the Public Resources Code Section and several CEQA court cases that discuss various requirements for an alternatives analysis under CEQA. However, the commenter makes no specific comments on the adequacy of the subject EIR. Consequently, no response is required.

E-63 The commenter concludes his letter by asserting that the Draft EIR ignores NOWWE's detailed submissions and fails as an informational document, and that the Draft EIR should be revised and recirculated. The commenter is referred to all responses to comments in this letter which demonstrate that the Draft EIR meets all applicable standards of adequacy under CEQA, and further, does not trigger any requirements for recirculation as defined in the CEQA *Guidelines*.

E.A-1 The commenter indicates the Applicant's geotechnical report titled "Geotechnical Study Report Update, Rainwater Tanks, dated October 21, 2011" prepared by RGH Consulting fails to demonstrate the geologic stability of the proposed tank site, and that the bases for this opinion are presented in the subsequent sections of the comment letter.

These comments do not provide any specific comments on the adequacy of the Draft EIR; consequently no response is required. However, please see responses to Comments E.A-3 through E.A-9, below.

E.A-2 The commenter indicates the Project site has been the subject of a number of previous geologic investigations and peer reviews, indicates the applicant's geotechnical investigations are substandard, and refers the reader to subsequent sections of the comment letter.

These comments do not provide any specific comments on the adequacy of the Draft EIR; consequently no response is required. However, please see responses to Comments E.A-3 through E.A-9, below.

E.A-3 The commenter asserts the June 13, 2012 report prepared by the applicant's geotechnical consultant, RGH, did not include any data indicating geologic structure at the proposed tank site, and did plot the bedding planes on the geologic map.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E.A-4 The commenter asserts that in the June 13, 2012 report prepared by the applicant's geotechnical consultant, the proposed method of creating the tank pad, construction of high retaining walls, and placement of soil backfill would add surcharging weight to the slope upon which the tanks would be placed, which has the potential to reduce slope stability.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E.A-5 The commenter asserts that in the June 13, 2012 report prepared by the applicant's geotechnical consultant RGH, the line of Geologic Cross Section A'-A plotted on the Geologic Map (Plate 2) does not pass through the proposed tank site, yet the rainwater tank is shown on the cross section (Plate 4).

The June 2012 RGH report contains 4 Plates: Plate 1 is the Site Location Map; Plate 2 is the Site Geologic Map; and Plate 3 is the Exploration Plan Showing Landslides. The cross section line A – A", which passes through the rainwater storage tank site, is shown on Plate 3, and the cross section itself, showing the rain water tanks, is shown on Plate 4.

E.A-6 The commenter asserts that in the June 13, 2012 report prepared by the applicant's geotechnical consultant, Cross Section A''-A does not show the specific lithology encountered in the borings plotted on the cross section nor does the cross section show any geologic structure within the Franciscan materials that were encountered in the borings.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E.A-7 The commenter asserts that in the June 13, 2012 report prepared by the applicant's geotechnical consultant, the subsurface investigation of the proposed tank site encountered the same geological materials that formed large landslides throughout the same site, and that this does not appear to be strong competent stable geologic materials.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E.A-8 The commenter inquires why the June 13, 2012 report prepared by the applicant's geotechnical consultant reviewed so few aerial photographs.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E.A-9 The commenter asserts the June 13, 2012 report prepared by the applicant's geotechnical consultant improperly relied on CDMG Special Report 120 to provide site-specific landslide hazard assessment information.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

E.A-10 The commenter raises issues related to a complaint that was filed against the commenter. These comments do not address the adequacy of the Draft EIR; consequently, no response is required.

E.A-11 The commenter provides personal opinions about the commenter's prior peer review of geotechnical issues at the site, and the effect the commenter believes this peer review has had on the Project. These comments do not address the adequacy of the Draft EIR; consequently, no response is required.

E.A-12 The commenter indicates that the prior geotechnical reports do not include sufficient data and analysis to describe the geologic stability of the rainwater tank site for the reasons the commenter stated in the previous comments. Please see responses to Comments E.A-3 through E.A-9, above.

E.B-1 The commenter questions why the County would designate roughly one-half of its area as requiring special water availability investigations and testing and then exempt projects because it is problematic to do mandated investigations. The commenter asserts that the Draft EIR relies on small scale regional maps rather than site-specific geologic investigations, and that unsubstantiated estimates are good enough because of the absence of suitable wells and that property investigation and testing would be problematic. The commenter also claims that the general characterization of site geologic conditions within the Cornell Farms property and the stated reasons for not performing County-required water availability tests, are inconsistent with what is known about the Cornell Farms property and inconsistent with the County's water availability map and County-required information to document water availability. Please see Master Response HYD-1 in Chapter II in this Response to Comments Document.

E.B-2 The commenter discusses the County's Groundwater Availability map, and indicates Zones 3 and 4 are considered water scarce, and for these zones, the County has instituted a specific and detailed set of investigative procedures that must be completed to prove that water is available to the proposed project and that use of this water will not adversely affect neighboring water users and the environment.

Please see Master Response HYD1 in Chapter II of this Response to Comments Document.

E.B-3 The commenter discusses an inquiry by the California Department of Consumer Affairs Board for Geologists and Geophysicists (currently the California Department of Consumer Affairs, Board for Professional Engineers, Land Surveyors, and Geologists) regarding the applicant's 2004 groundwater availability study prepared by RGH Consultants. This comment does not address the adequacy of the Draft EIR; therefore no response is required.

The commenter also asserts that the applicant's 2006 groundwater availability study does not include data required to characterize the site, and for that reason, the special requirements for groundwater availability investigations in Zone 4 have not been met.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

E.B-4 The commenter repeats a number of comments made in Comment E.B-1, above, and describes his interpretation of correspondence with County staff related to County water availability investigation requirements.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document. See also responses to Comments F.D-2 and F.D-7.

E.B-5 The commenter first repeats a number of comments made in Comment E.B-1regarding the characterization of site geologic conditions within the Cornell Farms property and reasons for not performing County-required water availability tests.

The commenter then asserts that geologic setting of the site is inconsistent with the representations made by RGH since 2004, and that the EIR ignored the findings of RGH in characterizing the geologic setting, and used only small scale maps.

Please see Master Response HYD-1 in Chapter II in this Response to Comments Document.

E.B-6 The commenter asserts that the EIR states that an aquifer test was not performed because there were no suitable wells for doing so, and adds that the County requirements do not presume that the wells are preexisting. The commenter also indicates that geologic subsurface investigation is often problematic, but is an essential part of the land development process, and that it is only an issue of cost. The commenter adds that there is no exemption that allows developers to bypass regulatory requirements because meeting those requirements would be expensive.

Please see Master Response HYD-1 in Chapter II in this Response to Comments Document.

10.453.01

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March 28, 2012

VIA EMAIL AND FEDERAL EXPRESS OVERNIGHT DELIVERY
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David Hardy, Supervising Planner
County of Sonoma, Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Re: Henry Cornell Winery Project, 245 Wappo Road

Dear Mr. Hardy:

On behalf of the members of New-Old Ways Wholistically Emerging ("NOWWE") and other concerned residents of Mark West Creek watershed, we respectfully submit the attached Scoping Comments for the Environmental Impact Report ("EIR") to be prepared pursuant to the California Environmental Quality Act ("CEQA"), on the proposed Henry Cornell Winery Project ("Project") at 245 Wappo Road, Santa Rosa. We incorporate by reference the letters and exhibits submitted by NOWWE on October 8, 2009, November 5, 2009, November 11, 2009, February 10, 2010, February 24, 2010, March 31, 2010, and September 21, 2010. Please include this letter and the attached Scoping Comments in the public record on this matter.

Very truly yours,

Stephan C. Volker
Attorney for New-Old Ways
Wholistically Emerging

SCV:taf
Attachment: as stated

COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

IN RE CORNELL WINERY	)	
ENVIRONMENTAL IMPACT REPORT	)	UPE 07-0008
	)	State Clearinghouse # 2008102040

EIR SCOPING COMMENTS OF NEW-OLD WAYS WHOLISTICALLY EMERGING

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ATTACHED EXHIBITS

Exhibit A	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Proposed Stormwater, Domestic Waste and Process Wastewater Disposal,* February 1, 2011
Exhibit B	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Report in Support of Proposed Rainwater Tanks*, November 1, 2011
Exhibit C	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Preliminary Grading, Drainage, and Erosion Control Plan,* November 8, 2011
Exhibit D	Raymond Waldbaum, The Engineering Geologist, *Engineering Geologic Review of Supplemental Groundwater Availability Study*, January 11, 2012
Exhibit E	Jules Evens and Lisa Hug, Avocet Research Associates, *Review of Biological Resources Report for the Cornell Winery Project,* September 14, 2011
Exhibit F	Patrick Higgins, Consulting Fisheries Biologist, *Comments on Impact of the Proposed Cornell Winery Project to Mark West Creek Pacific Salmon Species and Critical Habitat*, January 2012
Exhibit G	Peter R. Baye, Coastal Ecologist, Botanist, *Assessment of Special-Status Plant Species Impacts and Adequacy of Mitigation*, December 12, 2011
Exhibit H	Derek Acomb, California Department of Fish and Game, *Memorandum on Fish Relocation*, September 7, 2011
Exhibit I	Derek Acomb, California Department of Fish and Game, *Memorandum on Snorkel Survey*, September 7, 2011
Exhibit J	Laura Waldbaum, Informational Timeline Regarding Fish Stranding in the North Fork, August 16, 2011
Exhibit K	James Robinson, JR Squared Consulting Inc., *Review of Reports for Cornell Winery*, February 11, 2012
Exhibit L	Dean O. Gregg, The LeBaugh Group, Inc., *Review of Supplemental Groundwater Availability Study*, February 18, 2012
Exhibit M	Laura Waldbaum, *Note Regarding Water Delivery*, December 5, 2011

Exhibit N Cotton, Shires and Associates, Inc., *Geologic and Geotechnical Peer Review, Proposed Storm Water Storage Tanks,* November 14, 2011

I. INTRODUCTION

Mark West Creek has suffered severe degradation including stream bank erosion, landslides, sedimentation, dewatering, and loss of riparian vegetation due to extensive removal of mature redwoods, oaks and other vegetation, unsustainable groundwater pumping, and ill-advised grading on steep and unstable slopes. These damaging activities have destroyed fish and wildlife habitat including pools and riffles needed for coho salmon and steelhead spawning and rearing habitat and now threaten these protected salmonid species with extirpation from this formerly pristine watershed. The proposed Henry Cornell Winery Project would pour salt into the wounds afflicting these vulnerable species.

The County must address these cumulative watershed effects in its EIR for the Project in order to adequately examine the Project's impacts. Because of the Project site's unstable geology, and already degraded watershed conditions, the Project poses particularly acute risks of further watershed damage, as well as significant impacts on special-status plant and animal species. "The Project's potential effects include increasing flood peaks, decreasing base flow and increasing sedimentation that will couple with effects from existing over-development and likely push the Mark West Creek aquatic ecosystem past its tipping point." See attached Exhibit F at ii. F-1

NOWWE urges the County to correct past informational deficiencies by fully addressing each of these issues in its forthcoming EIR. The County must either ensure all such impacts are mitigated to the maximum extent feasible or disapprove the Project.

II. THE PROJECT WILL HAVE SUBSTANTIAL HYDROLOGICAL IMPACTS.

There have been six overarching deficiencies in past analyses of the Project's hydrological impacts that must be remedied in the EIR. First, the EIR must account for the water use of *both* the vineyard and the winery. Second, the planned water storage tanks are inadequate to mitigate the Project's water use. Third, the proposed conservation easement is ineffective to mitigate the Project's water use. Fourth, the winery will admittedly draw groundwater during the dry summer months and thus substantially affect the hydrology of Mark West Creek. Fifth, the Project will cause erosion and the deposition of sediment into Mark West Creek. Finally, numerous uncertainties surround the process wastewater disposal system. These hydrological impacts must be thoroughly disclosed, analyzed, and mitigated in the EIR. F-2

A. The "Project" Includes Vineyard Water Use.

Some prior documents have omitted the *vineyard's* water use when calculating the *Project's* water use. *See, e.g.,* August 2010 MND at 26 ("'Project' water usage does not include the 3.69 AFY for the vineyard"). But these two water uses are closely related aspects of the same overall project. Such an improper segmentation of the Project is not permitted by CEQA. "'Project' means the whole of an action" that "has a potential for F-3

resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect change in the environment. . . ." CEQA Guidelines [14 C.C.R.; "Guidelines"] § 15378(a). Here, there are three reasons why the vineyard must be included in the Project's water use. F-3 cont.

First, as discussed in NOWWE's November 5, 2009, comment letter, the "Project" includes the vineyard because it is unlikely that the winery would be constructed but for the adjacent vineyard. One MND concluded that the Project will not be inconsistent with the Sonoma County General Plan *because the wine produced onsite will be produced from grapes from the adjacent vineyard.* August 2010 MND at 30. Permitting the winery without the vineyard would violate Sonoma County's General Plan. Because the winery cannot be approved but for the vineyard, the two activities are part of the same "Project." F-4

Second, the "Project" includes the vineyard because the winery's process wastewater will be disposed of in the vineyard. *See, e.g.,* Dennis Jackson, Hydrology Report dated September 16, 2010 ("Jackson Report"), at 5;[1] Biological Resources Report, Ted Winfield & Associates, dated September 14, 2011 ("BRR") at 18. By using the vineyard as the Project's waste disposal system, the vineyard is incorporated into the Project. F-5

Third, the vineyard is part of the Project because the Project applicant had planned to construct a winery since at least 2002, before the adjacent vineyard was created. *See* Exhibit 1 to February 24, 2010 NOWWE letter. Because the winery and vineyard were always planned to exist together, both actions are part of a single "Project" for the purposes of CEQA. *Bozung v. Local Agency Formation Commission* (1975) 13 Cal.3d 263, 283-84. F-6

B. **The Rainfall Storage Tanks Do Not Mitigate the Project's Water Use.** F-7

The applicant plans to use two sets of storage tanks in an attempt to mitigate the vineyard's water use by harvesting rainwater. They are inadequate for this purpose, as discussed below. Moreover, the storage tanks may themselves have significant environmental impacts.

1. Whether Landscaping Requires Pumping Is Unknown. F-8

First, although the Project's proposed rainfall capture system is designed to irrigate native landscaping,[2] total landscaping water demand is unknown. It is impossible

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1 As set forth in section VII of this comment letter, NOWWE requests that the County confirm that Mr. Jackson's report is contained within the files of both the County and its EIR consultant.

2 "Runoff collected . . . and pumped to the rainwater harvest storage tanks" would be "initially used to irrigate the native plants being used for landscaping. . . . Once these

to know whether these unquantified water needs can be wholly satisfied through the harvesting system, or, conversely, whether groundwater pumping will be required. This critical information must be provided in the EIR. Additionally, the EIR's analysis of the Project's landscaping water use must account for the seasonal variability of rainfall. For example, a warm and dry spring would "lead[] to a longer irrigation season . . . resulting in greater total water use." Jackson Report at 7. And dry years are likely to coincide with an *increased* need for landscaping irrigation.

F-8 cont.

The rainwater system's 140,000 gallon capacity[3] would take 33.52 inches of rain to fill (assuming that the rainfall harvest area is 6,700 square feet). Jackson Report at 7. In some dry years past, recorded rainfall has been only 17.98 inches. *Id.* If the storage system is exhausted, will additional groundwater be pumped to satisfy landscaping needs? The Project's total water use, including landscaping, must be disclosed in the EIR, and the sources for each use of water determined.

2. The Capture System Will Be Overwhelmed By Substantial Rainfall.

The rainwater harvesting system is only designed to completely contain the runoff "from the 85th percentile 24-hour storm event." BRR at 16. The harvesting system will thus be overwhelmed at the worst possible time – during the 15% of storms that have the highest rainfall and that thereby pose the greatest risk of causing erosion and slope failure. Moreover, as discussed more fully below, increased runoff causes sedimentation of streams and thereby adversely affects protected species. The EIR must analyze and mitigate the environmental impacts of this increased runoff.

F-9

3. Harvested Rainwater Cannot Mitigate the Vineyard's Water Use if It Is Being Used for Landscaping.

Similarly, the BRR relies upon the rainwater harvesting system to mitigate the vineyard's water use at the same time as it relies upon the harvested rainwater as a source of landscaping water. BRR at 16, 20. Quite obviously, the water cannot be used for two competing purposes at the same time. If the harvested rainwater will be used to support native plants for multiple years until they "are established" (BRR at 16), the same water cannot mitigate the vineyard's water use during those years. BRR at 20. The EIR must analyze and mitigate the environmental impacts of additional groundwater pumping during the years that harvested rainwater is used for landscaping.

F-10

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native plants are established, the rainwater will be used for vineyard irrigation later in the year." BRR at 16.

3 BRR at 20.

C. **The Proposed Conservation Easement Does Not Mitigate the Project's Water Use.**

The BRR concludes that approval of the Project will have "a direct long-term and cumulative beneficial impact on the watershed" because "while the Project will use 135,550 gallons of water per year, almost seven times that amount of water will not be drawn from the watershed due to the conservation easement." BRR at 20. But as NOWWE has repeatedly pointed out in the past, the conservation easement is a wholly ineffective means of mitigating the Project's water use.

Most significantly, the creek to which the easement would apply typically has no water in the dry season and thus the parcel owner has no surface flow to "swap." As the record shows, the previous owner of 100 Wappo Road was forced to drill a well because, since the late 1990's, "no water has been available from the creek in certain times of the year including late summer."[4] Since the creek typically has no flow during the dry season, when the winery would need the water, the riparian water rights swap is unlikely to reduce the Project's water use *at all*. The winery's water usage cannot be offset by forfeiting the rights to water that *does not exist* during the times of year when it is *most needed* by the winery. F-11

Additionally, the proposed conservation easement as described in the BRR apparently fails to prohibit well withdrawals from the 100 Wappo Road property, rendering the easement essentially meaningless. *See* BRR at 19-20 (provisions include only house demolition, building permit forfeiture, riparian rights waiver, and vineyard installation forfeiture). NOWWE's November 5, 2009, comment letter explained that omitting the well from the conservation easement renders the easement wholly ineffective as a means of conserving water, as the same quantity of water could simply be pumped, resulting in the same loss to the creek. *See* NOWWE's November 5, 2009, comment letter at 4 & Exhibit 9 thereto at 4. While the County had previously modified the conservation easement to prohibit well withdrawals in response to NOWWE's comment,[5] apparently the County has changed its mind. This modification itself renders the conservation easement a worthless mitigation measure.

Moreover, conservation easements are novel instruments and it is no easy task to create a land restriction whose purpose is to remain effective *forever*. The precise source of legal authority for the conservation easement remains unspecified. Pitfalls abound. First, the unexercised riparian rights of future owners of the parcel ostensibly subject to the purported conservation easement cannot be extinguished by the current owner. *In re*

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4 Exhibit 9 to NOWWE's November 5, 2009, comment letter (hydrogeologic report of James Robinson), at 3.

5 *Compare* BRR at 19-20 *with* Board of Zoning Adjustments Resolution No. 10-025 (September 23, 2010), at 1 ("WHEREAS . . . the applicant proposed to . . . relinquish in perpetuity . . . the right to use water from a spring and well on the property for any purpose other than fire protection")

Waters of Soquel Creek Stream System (1978) 79 Cal.App.3d 682, 687; *In re Waters of Long Valley Creek Stream System* (1979) 25 Cal.3d 339, 347, 358.

Second, it is simply unlawful to condition permit approval on the donation of a conservation easement. As clearly stated in Civil Code section 815.3(b), part of the California Conservation Easement Act, "No local government entity may condition the issuance of an entitlement for use on the applicant's granting of a conservation easement pursuant to this chapter."

Third, it is unknown to whom, if anyone, the conservation easement will be transferred, raising additional questions. If the easement is not transferred at all, the doctrine of merger would extinguish it. (Under the merger doctrine, if a servitude is held by the same person that holds the right to the servient estate, the separate estates merge and the restriction is extinguished. Civil Code § 811.) Moreover, the Civil Code prohibits transferring the conservation easement to the County; local governments may hold conservation easements only if they are "voluntarily conveyed," which an exacted easement is not. *Id.* If the easement *is* transferred to a third party, it is unclear that the County – which at that point would not be a party to the easement itself – would retain the ability to enforce the agreement. Additionally, the chosen third party must have sufficient financial wherewithal, and longevity, to monitor the easement and be able to enforce it *in perpetuity* if it is violated. An endowment is likely necessary to defray such costs. Further, for the easement to be effective it must contain *strict and explicit* enforcement mechanisms – if the property subject to the easement were sold, the buyer would have a monetary incentive to violate the easement – but its terms are undisclosed. None of these concerns have been addressed, much less resolved.

F-11 cont.

In sum, the proposed conservation easement is not enforceable. Even if it were, it would fail to fully offset the Project's water use during the summer months when flows in Mark West Creek are low and the need to avoid pumping is most critical. The low flows in Mark West Creek during those times of year mean that there is unlikely to be enough water for both the Project and the 100 Wappo Road property to pump water simultaneously. If the EIR is to rely upon the conservation easement to fully mitigate the Project's water use, the easement must fully mitigate the Project's entire water use at each and every time of year. No record evidence supports such a conclusion.

D. The Project Will Indirectly Draw Water from Mark West Creek During Dry Months.

F-12

The applicant proposes to pump well water during the winter months to satisfy a portion of the winery's summer water needs; this collected water would apparently be stored in a 102,000 gallon tank. BRR at 19 ("up to 102,000 gallons of water will be pumped").[6] The BRR claims that this pumping would "substantially reduce" – not eliminate – the need for well pumping during the dry months. *Id.* The volume of this

6 As discussed below, such well pumping indirectly reduces surface flows in Mark West Creek.

necessary dry season pumping has not been disclosed and the resultant environmental consequences have not been analyzed or mitigated. Nor have the environmental consequences of the winter pumping been disclosed, analyzed, or mitigated. The DEIR must address these voids. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 448-449 (holding significant a ground water pumping project's potential impact on the Cosumnes River during periods of very low flow).

F-12 cont.

1. Reliance on Todd Engineers' Inadequate 2006 Study Is Inappropriate.

The BRR echoes the 2006 conclusion of Todd Engineers that "the pumping proposed for the Cornell Farms wells will have no significant impact on the surface or ground water yield of the" watershed feeding Mark West Creek. BRR at 18. As NOWWE has pointed out repeatedly in the past, Todd's work is subpar and its conclusions are unreliable. No response to NOWWE's expert testimony on this point has been offered.

Todd's site investigation was "completely inadequate" in Raymond Waldbaum's "professional opinion" because Todd relied only upon "regional geologic maps that are totally unsuitable for characterizing individual sites." Exhibit D at 3. As geologist Dean Gregg relates, "[n]one of the data or information used are reliable or substantiated by actual field data from the site area. No geologic mapping was performed and only references to a coarse-scaled geologic map were used. No independent determination of well yield was made. . . ." Exhibit L at 2. In fact, the regional maps used by Todd *explicitly state* that improperly using them "for detailed planning" in connection with "maps with dwelling unit density zones and ownership parcels," would "*almost surely*" lead to "distortions . . . misrepresentations of fact," and "erroneous judgments affecting substantial interests." Exhibit D at 3-4. In contrast with Todd's perfunctory analysis, Mr. Gregg notes that "[a]s a Professional Engineer, Professional Geologist, and Certified Hydrogeologist with over 50 years experience, and considering the ramifications of [his] assessment, [he] would have spent several days in the field to conduct a 3-or 4-day aquifer test, collect water-level data, verify the geologic map with exposures, and discuss groundwater conditions, well yields, [and] dependability of wells with other well owners." Exhibit L at 2.

F-13

Todd's 2006 study was also deficient because it measured the flow in Mark West Creek at a USGS gauge about 17 miles from the Project site. Exhibit F to NOWWE's October 8, 2009, comment letter at 3. Of course, "[a]ny impacts to water resources and the environment associated with the project will be greatest and most significant within and immediately adjacent to the site – not a location 17-miles downstream and having an intervening drainage area of approximately 40-square miles." *Id.* Tributaries near the Project site have much lower flows than would be measured at the USGS gauge, and Project impacts accordingly are much more substantial than Todd acknowledged. As explained more fully below, "the potential certainly does exist for the Cornell project to impart significantly adverse reductions in creek summer base flow and, in turn, impacts

F-14

to creek ecology within and downstream of the confluence of the North and South watersheds." *Id.* at 4; *see also* Exhibit F hereto at 10-15 (explaining that the aquifer from which the Project will draw water "is likely feeding the mainstem Mark West Creek through sub-surface flows, even when there is no surface water connection"). F-14 cont.

Todd's conclusion that "groundwater pumping will not have any impacts upon Mark West Creek because the area of influence from the pumping would be at most 500 feet and the "distance between the well and Mark West Creek and its tributaries is greater than 500 feet" is similarly mistaken. August 2010 MND at 26; *see also* BRR at 96 (relying on Todd's report). The conclusion rests upon the assumption that the well pump would operate for only 18 hours – but it is in fact likely to operate for 90 days in a row. Jackson Report at 25-27. When this error is accounted for, the well's area of influence is revealed to be at least 1,114 feet, not 500 feet. *Id.* at 27. "A portion of the unnamed tributary to Mark West Creek is within th[is] radius of influence . . . so it is likely that the flow in the tributary will be diminished by the operation of the . . . [P]roject well." *Id.* at 28-29. F-15

In sum, Todd's 2006 report is riddled with methodological problems and lacks crucial data. It therefore does not constitute substantial evidence. Guidelines § 15384(a). Because Todd's report is not substantial evidence, the EIR must not rely upon it. F-16

2. A Constant-Rate Aquifer Test Is Required.

The foregoing methodological deficiencies and dearth of data are exacerbated by Todd's improper utilization of a short-term airlift test rather than a constant-rate aquifer test. "The best and most appropriate method for determining groundwater flow and storage characteristics in fractured bedrock aquifers like those that exist under the Cornell site is to perform an aquifer test," not an airlift test. Exhibit F to NOWWE's October 8, 2009, letter at 2. "[A]n aquifer pump test is required to adequately evaluate potential impacts from Cornell groundwater withdrawals on local-area water resources, and, in turn, ecological conditions sustained by dry-season, groundwater-fed baseflow in the Northern and Southern drainage area creeks." *Id.* at 3. The fact that since 2007 nearby wineries have been forced to import water *even during the typically wet month of December* is a stark indicator of the minimal groundwater availability in the area. *E.g.*, Exhibit M (observation of Laura Waldbaum). F-17

Todd's use of the wrong test renders its opinions "of limited value" at best when ascertaining long-term environmental impacts and groundwater availability. Exhibit H to NOWWE's October 8, 2009, letter at 5 (Department of Water Resources comment letter); *see also* Exhibit D hereto at 4-5 *and* February 2010 MND at 21 (same). Unless a constant-rate aquifer test is completed, "the water availability of the site is simply unknown." Exhibit 9 to November 5, 2009 letter, at 3; Exhibit L hereto at 2 ("No . . . 3 or 4-day aquifer test" was "performed" and so no "hard, dependable and verifiable data to quantify and determine the reliability of the source" exists). F-18

County staff previously refused to require a constant-rate aquifer test because "the geologic environment is extremely complex," the "extensive cooperation that" such a test requires "may or may not be available," and the test "may or may not yield any meaningful information." February 2010 Staff Report at 2-3. In essence, the County claims that it is too expensive to do the constant-rate aquifer test. *See* Exhibit D at 2 (relating County staff's approval of admittedly substandard document because there was "no remaining budget to amend th[e] report"), emphasis omitted. Second, the County argues that it is not required because the conservation easement "will sufficiently offset the winery water use." *Id.* at 3. However, whether a constant-rate test is expensive and difficult to conduct has no bearing on whether doing so is required by CEQA. And the conservation easement will not "fully offset" the Project's water use during all times of year, as explained above. F-19

As NOWWE first noted more than two years ago, "CEQA does not allow developers to avoid its requirements whenever they prove financially burdensome. The purpose of CEQA is not to suit the convenience of project applicants, but rather to 'inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made.'" November 11, 2009 letter, at 2 (quoting *Meija v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 330). CEQA requires the EIR to contain a full and complete analysis of the environmental consequences of the Project's groundwater pumping. *Vineyard, supra*, 40 Cal.4th at 448-49. Todd's conclusion that an airlift test sufficed has no scientific basis and therefore is not substantial evidence. Guidelines § 15384(a). The EIR must include the results of a constant-rate aquifer test. F-20

Additionally, because there has been no demonstration that the Project has a reliable water supply and an inadequate short-term airlift test was conducted in lieu of the required constant-rate aquifer test, the Project also violates items 9-12 and 13-17 of the mandatory Groundwater Checklist for Sonoma County. One of the applicant's consultants, Kleinfelder, *admitted* in correspondence to the County dated March 5, 2008, that the testing required by Items 9 through 12 on the Checklist *was never done*. Instead, Kleinfelder claimed that the County's requirements were "not necessary." NOWWE's experts have explained that this self-granted exemption is improper and that, additionally, items 13 through 17 on the Checklist were likewise *not met*. *See* Exhibit 9 to NOWWE's November 5, 2009 letter, at 2-3 (finding it "completely inappropriate" for Kleinfelder to claim that the required testing is "not necessary," because (1) there is ample evidence in the record – such as recorded deliveries of *imported* water to nearby wineries – that local groundwater supplies are *not* adequate, and (2) Kleinfelder's "task [wa]s to confirm compliance with published standards, not to decide which standards [Kleinfelder] think[s] are important . . . and which must be complied with or not"); *id.* at 5 (*Checklist* items 9-17 *not met*); *see also* Exhibit L hereto at 2 (noting that PRMD in 2004 determined that the site to be one of limited water availability but nonetheless failed to require compliance with County standards applicable to such areas). F-21

Similarly, the Project fails to comply with Sonoma County General Plan Water Element Policy WR-2(e). *Id.* That section requires proof of groundwater availability in water-scarce areas like the Project vicinity, which has not occurred. *See, e.g.*, Exhibit D F-22

at 4. CEQA requires the EIR to disclose, analyze, and mitigate such inconsistencies. Guidelines § 15125(d). F-22 cont.

3. Project Groundwater Pumping Will Reduce Flows in Mark West Creek.

As explained in watershed biologist Patrick Higgins' report, the groundwater aquifer is so interconnected with Mark West Creek that any groundwater pumping at the Project site will necessarily decrease flows in Mark West Creek. Again, the BRR admits that the Project's reliance on well pumping during dry months would merely be "reduce[d]" – not eliminated – by the proposed mitigation measures. BRR at 19 ("collection of water for winery use and fire protection during the wet season will substantially reduce the need to draw from the well during the drier periods of the year"). And as thoroughly explained in Mr. Higgins' report, this pumping will indirectly reduce surface flows by reducing the amount of groundwater inflow to Mark West Creek, with disastrous effects on salmonids whose population has already declined sharply due to low summer and fall flows. F-23

Groundwater inflow – which tends to be very cold – is crucial to the success of steelhead, which require cool water. Exhibit F at 11-13. In Mr. Higgins' expert opinion, the temperature data collected by DFG while snorkeling in Mark West Creek clearly indicates that "groundwater and/or hyporheic[7] water . . . is helping sustain juvenile steelhead" in Mark West Creek. Exhibit F at 13; *see* Exhibit I (DFG report). Two of the four pools measured by DFG had a difference of two degrees between the surface temperature and the streambed. *See* Exhibit I.[8] This temperature difference is due to the infiltration of cool groundwater into Mark West Creek. Exhibit F at 13. In other words, the "North Fork aquifer is likely feeding the mainstem Mark West Creek through subsurface flows, even when there is no surface water connection." *Id.* The presence of this cooler water also shows that Mark West Creek is currently a "gaining stream," one whose flow *increases* during its route as it is supplemented by cool groundwater. *Id.* F-24

The "development of groundwater at even a great distance from surface water can reduce the amount of groundwater inflow to surface water." Exhibit F at 11. "Pumping can intercept groundwater that would otherwise have discharged to a gaining stream," and "higher pumping rates . . . can induce flow from the stream to the aquifer." *Id.* at 15. "Wells tap[ping] into groundwater anywhere from the ridge down to the creek take away water that would otherwise create pressure in the aquifer that causes the slow feed of the pressure water [sic] that are the baseflows of the North Fork." *Id.* at 12. Excessive development is in danger of changing the North Fork of Mark West Creek to a "losing stream" – one that *loses* flow over the course of its run, as its flow is absorbed into the F-25

7 The hyporheic zone is where groundwater and surface water mix.

8 The "thalweg" temperature referenced in Exhibit I is the temperature at the deepest part of the stream bed.

groundwater basin – "which has profound ecological implications including the loss of substantial Critical Habitat for coho salmon and steelhead trout." Exhibit F at 12. F-25 cont.

Mr. Higgins also observes that the link between pumping and lower flows is demonstrated by the "rapid decreases in water" observed by DFG's biologist upon removing three steelhead from Mark West Creek to prevent their imminent stranding. *Id.* at 14-15. "'Changes in streamflow between gaining and losing conditions can also be caused by pumping ground water near streams'" and the sudden dewatering "in a wet year is another indication that changes in infiltration and groundwater use are having a serious negative effect on flows, steelhead trout and the aquatic ecosystem of Mark West Creek." *Id.* at 15, citation omitted. F-26

Moreover, even winter extraction of groundwater can lower summer flows. This is because flow into the groundwater basin is dependent upon the increased pressure created by large volumes of water, and when less water flows into the groundwater basin during the winter less water and thus less pressure exists to force water from the basin out into the stream during the summer. *Id.* at 13.[9] F-27

In sum, groundwater pumping even during winter or times of *no* flow has substantial adverse environmental consequences, notwithstanding Todd's scientifically unsupportable conclusions to the contrary. The complex interrelations between groundwater and surface flows have been repeatedly ignored during environmental review of the Project in favor of simplistic analyses based on little or no actual science. A constant-rate aquifer test must be conducted, and the EIR must disclose, analyze, and mitigate the environmental consequences of the winery's admitted dry season groundwater pumping rather than simply pretending such impacts do not exist. F-28

E. **The Runoff Generated by the Project Will Have Significant Environmental Impacts.**

The EIR must address the environmental impacts of the Project's increased storm runoff. Past analysis has been deficient in three main areas. F-29

9 In Mr. Higgins' words, "[a]s the amount of water discharged into the stream increases, hyporheic water supply increases due to downwelling (Winters et al. 1998). Decreases in winter peak flow caused by the Project will[,] therefore, decrease pressure that drives hyporheic storage. Reduced groundwater from the aquifer outside the hyporheic zone (phreatic zone) will similarly decrease pressure due to well operation in all seasons and, consequently, reduce surface flow contributions through upwelling from the hyporheic zone that supports juvenile steelhead rearing." Exhibit F at 13.

1. Quantification of the Project Runoff Is Inaccurate.

First, the amount of additional runoff that the Project will generate has not been accurately quantified.[10] As noted by geologist Raymond Waldbaum, the December 2010 *Storm Water Calculations* prepared by Atterbury & Associates "are obtained from regional maps that do *not* reflect the high-rainfall microclimate of the project site. Rainfall measurements made at the Doerkson Ranch . . . nearby . . . over a period of decades indicate that actual rainfall is *up to 6 times the rainfall quantity used by Atterbury*." Exhibit A at 2 (containing table of measurements) (underline supplied; italics added). As such, "up to 6 times the concentrated runoff quantity indicated" is likely to be "discharge[d] . . . during the lifetime of the Project." *Id.* This dramatic underestimate calls into question whether the planned rain gardens and buffers can actually accommodate the Project's full volume of runoff.[11] The Project's runoff must be accurately quantified and the resultant environmental impacts disclosed, analyzed, and mitigated.

F-29 cont.

2. The Project Will Substantially Alter the Drainage Pattern of the Site.

The Project may substantially modify the site's drainage pattern[12] and is likely to increase the flow of sediments into Mark West Creek, as even the BRR admits. BRR at 96 ("Construction and operation of the Project may increase movement of sediments into Mark West Creek. . . ."). The resulting environmental consequences must be disclosed, analyzed, and mitigated.

F-30

a. The Project Will Increase Runoff to the Freshwater Pond at 100 Wappo Road, with Significant Environmental Impacts.

The Project's potential to modify the drainage pattern of the site so that a significant portion of the Project's runoff would flow into the freshwater pond at 100 Wappo Road will likely cause numerous significant environmental impacts. For example, the runoff from Wappo Road could "carry pollutants, such as oil and grease

F-31

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10 As set forth above, the rainwater harvesting system can only contain runoff (1) that is produced by the winery during (2) a storm of less than 85th-percentile intensity. BRR at 16.

11 As discussed below, the rain gardens and buffers are additionally questionable mitigation measures because they are likely to concentrate water on unstable slopes, potentially causing slope failure.

12 For example, the August 2010 MND noted that "[i]nstead of draining by gravity to . . . the un-named tributary of the North Fork of Mark West Creek, water would instead tend to flow . . . onto Wappo Road itself or into . . . the pond on the adjacent parcel." August 2010 MND at 29.

from vehicles . . . into the pond." Jackson Report at 10. Moreover, the Project's runoff is likely to be laden with sediment due to the easily eroded soils in the vicinity, exacerbating these environmental impacts. *Id.* at 9-10. While the BRR conclusorily asserts that the rain gardens and vegetated buffers will "treat" the additional runoff (BRR at 16), the effectiveness of these measures has not been demonstrated. Nor have the environmental impacts of the sediment likely to be present in the runoff been disclosed, analyzed, or mitigated.

F-31 cont.

Additionally, even assuming the Project would only cause an increase in *treated* runoff to the freshwater pond at 100 Wappo Road, nonetheless environmental impacts will result. As biologist Patrick Higgins explains, that freshwater pond is inhabited by a variety of invasive species that prey on vulnerable native species. Exhibit F at 25. By increasing the volume of freshwater in that pond, the Project will "promote competition that ensures the[] demise" of native species. *Id.* The EIR must address this topic.

F-31A

b. The Planned Erosion Control Measures Are Ineffective and Will Themselves Cause Significant Environmental Impacts.

Furthermore, the applicant has failed to demonstrate the effectiveness of the planned erosion control measures, notwithstanding the BRR's conclusory statements to the contrary. BRR at 96. The need for effective erosion control is particularly acute because many nearby stream channels cross easily eroded soils. *See* Jackson Report at 9-10. It is very unlikely that such plans could "reduce the magnitude of the storm runoff sufficiently to prevent erosion of the bed and banks of streams between the winery and Mark West Creek." As such, "the stream channel on 100 Wappo Road below the proposed winery will be eroded by the increased stormwater discharge from the winery." *Id.* Similarly, it is likely that the "volume" of "stormwater runoff discharged from the paved portion of Wappo Road" will "be of sufficient magnitude to erode the bed or banks of the stream channel below the Cornell Winery Project[.]" *Id.* The EIR must disclose, analyze, and mitigate these significant impacts.

F-32

Moreover, the planned rain gardens and vegetated buffers may themselves cause significant environmental impacts by "concentrating increased soil moisture on slopes that already appear unstable, based on what is known about the site." Exhibit C at 4. NOWWE's geologist "ha[s] seen slope failures triggered by this exact situation." Exhibit A at 2. It is completely inappropriate for a situation likely to create slope failure – excessive moisture being directed onto unstable slopes – to be "created intentionally on a site that is already *known* to be geologically unstable. . . ." *Id.* at 2-3; *see also id.* at 3 (because the planned 'vegetated rock diffusers' are located next to slopes with an extreme gradient, they are also likely to cause slope failure).

F-33

F. **The EIR Must Resolve Existing Uncertainties About the Process Wastewater Disposal System.**

Process wastewater from the winery would be pumped uphill and used to irrigate the Cornell vineyards. BRR at 18. The EIR must address the significant impacts that this system is likely to cause.

Because uphill pumping is required, the possibility of pump failure, including the possibility of accidental discharge to nearby waterways, must be acknowledged, and mitigated. Jackson Report at 14. While the process wastewater disposal system includes a storage tank, the environmental impacts of a pump failure during a period of high wastewater generation – when the holding tank is likely to be full – must be disclosed, analyzed, and mitigated. *Id.* Additionally, the environmental impacts of physical construction of the pipeline are unknown. As explained below in section IV(A)(4)(b), the trenching involved with pipeline construction is itself likely to cause significant environmental impacts. The EIR must disclose, analyze, and mitigate these impacts. F-34

Moreover, groundwater contamination could be caused by the planned simultaneous irrigation with both well water and processed wastewater, as pumping draws wastewater into the aquifer. Jackson Report at 14-15. The EIR must disclose, analyze, and mitigate this impact. Finally, the "[i]ncreased subsurface flow" that will result from this new irrigation method could "destabilize slopes below the vineyard." Jackson Report at 14. In Mr. Jackson's expert opinion, "a geologist should assess the stability of the slopes below the vineyards" to prevent additional landsliding. *Id.* The EIR must include the results of such an analysis. F-35

III. THE PROJECT WILL HAVE SUBSTANTIAL BIOLOGICAL IMPACTS.

Prior analysis of the Project's biological impacts is deficient, in at least five respects. First, the biological inventories that were conducted are inadequate. Follow-up tests must be performed. Second, the mitigation proposed for special-status plant species is inadequate, controversial, and unproven. Third, analysis of the Project's impacts on special-status animals, including the Northern Spotted Owl, is inadequate. Fourth, substantive analysis of the Project's impacts on special-status fish species has been studiously avoided. The Project will increase the amount of water drawn from nearby streams and is likely to kill endangered salmonid species by increasing the frequency of the complete dewatering of Mark West Creek that has occurred in the past. Fifth, as explained in section VI of this comment letter, the formulation of many biological resource mitigation measures has been unlawfully deferred. The EIR must correct these deficiencies and disclose, analyze, and mitigate all of the Project's biological impacts. F-36

A. Additional Biological Resource Inventories Must Be Conducted Before Project Approval.

The surveys conducted in connection with the Biological Resources Report are incomplete and inadequate. They cannot be relied upon for reliable information about the plant and animal species present on-site.

The BRR's surveys were limited and non-comprehensive. "The seasonal timing of coverage, from mid-April through August in a single year, would not detect species that occur on the site in winter or during fall migration." Exhibit E at 2. Certain "mammals [we]re identified as potentially occurring, but no systematic surveys were conducted to assess presence/absence or habitat association of those species." *Id.* at 4. Similarly, bats present on-site were "listed based on known distributions from the literature" rather than comprehensive on-site surveys. *Id.* These are crucial omissions. Moreover, nesting bird surveys were conducted only during May, June, and August, but the "nesting season for many, if not most, locally breeding species begins earlier in the year." *Id.* For this reason, "these surveys probably overlooked earlier nesting species, especially resident bird species and raptors." *Id.* Additional surveys must be conducted during other times of year to ensure that the EIR contains a complete profile of the species present on-site. F-37

Avian surveys were also conducted at the wrong time of day. "[S]tandardized protocols for avian surveys specify morning coverage. [Citation.] The coverage reported in [the BRR] was inadequate to accurately detect bird use of the site." *Id.* This is because the only "surveys that overlapped with the tail end of the nesting season" were "conducted in the evening hours," whereas protocols for avian surveys clearly state that the "best time for censusing . . . during the breeding season is usually between 5 and 9 a.m." and "[u]nder most circumstances, *no counts should be done after 10 a.m.*" *Id.* at 3; *see* United States Forest Service, *Handbook of Field Methods for Monitoring Landbirds*, May 1993, at 29.[13] "The *only* morning bird survey conducted in the Winfield report was in late-August, well outside the nesting season for most if not all locally nesting species." Exhibit E at 3, emphasis added. Further surveys – conducted before 10 a.m. – are necessary to "capture the period of maximum vocal activity of nesting birds and ensure comprehensive coverage. [Citation.]" Exhibit E at 3. F-38

Finally, the "buffer zones selected (50-feet and 300-feet) for evaluating impacts to nesting birds are proportionally inadequate, especially for raptors and large passerines." *Id.* The BRR used these buffer zones to evaluate impacts to birds living off-site. Yet the correct buffer zone covers *orders of magnitude* more land than the unduly narrow area used in the BRR. "For example, the prescribed buffer zone for a project in proximity to the occupied territory or nest of a federally threatened Northern Spotted Owl is **300-meters to 500-meters**, . . . depending on the source of disturbance." *Id.* at 3-4 (emphasis F-39

13 This document is available at http://www.fs.fed.us/psw/publications/documents/psw_gtr144/psw_gtr144.pdf.

supplied). Due to this inadequacy, "the area covered in the [BRR] is only a small fraction (0.25 to 3.3%) of the potential impact caused by construction activity." *Id.* at 4. F-39 cont.

Given all of these deficiencies, the BRR's conclusions about the species present on-site are "unreliable and the list of birds provided in the report is certainly incomplete." *Id.* A list of 12 special-status bird species whose presence was likely overlooked can be found on pages 9 to 12 of Exhibit E hereto. Additional biological resource inventories must be conducted to allow the EIR to include an accurate and reliable assessment of the Project's biological impacts. F-40

B. The Project Will Have Significant Impacts on Special-Status Plants and the Proposed Mitigation Is Controversial and Unproven.

At least one rare special-status plant, the narrow-anthered California brodiaea, is present on-site.[14] The BRR improperly analyzed the Project's significant impacts to this species, and in fact revealed that some brodiaea were pre-emptively *destroyed* by the Project applicant. The EIR must disclose, analyze, and mitigate the Project's significant impacts on special-status plants. *Vineyard, supra,* 40 Cal.4th at 449 (potential impact on threatened species "is *per se* significant"), citing Guidelines § 15065(a)(1).

Approximately 140 brodiaea plants exist within the construction disturbance footprint. Exhibit G at 1, citing BRR at 92. The presence of so many plants, which are in three separate colonies and of varying sizes, "suggests that there has been a viable population of this subspecies that is well-established and possibly expanding." Exhibit G at 2. "The loss of this population, or reduction of its viability to the threshold at which it may undergo long-term decline, would cause extirpation of one of only 28 known occurrences, many of which are threatened with declines or extirpation." *Id.* F-41

Apparently some of the brodiaea corms and seeds were removed from the Project site in anticipation of transplantation upon Project approval. Exhibit G at 1-2, citing BRR at 51, 92. Such removal was improper scientifically – as discussed below such transplantation is risky at best – and unsupportable legally.

The first legal problem with the pre-emptive removal is that CEQA requires assessment of Project impacts to be based upon the environment as it exists at the outset of environmental review. *E.g.,* Guidelines §§ 15125(a), 15126.2(a). Here, environmental review has been ongoing since 2009, and the baseline against which the Project's impacts should be measured must account for impacts on the brodiaea as it existed in 2009. To allow proponents of a pending project to deliberately remove protected species and then ignore the resulting impacts during environmental review would make a mockery of CEQA's mandate for informed decision-making. CEQA does not permit agencies to

14 This plant is listed on the California Native Plant Society's List 1, and is thus a "special-status species" pursuant to Guidelines § 15380.

allow or encourage purposeful environmental degradation during pending environmental review to minimize a project's impacts. F-41 cont.

Second, the pre-emptive removal was legally improper because it constitutes an unlawful pre-approval of the Project. "[B]efore conducting CEQA review, agencies must not 'take any action' that significantly furthers a project 'in a manner that forecloses alternatives or mitigation measures that would ordinarily be part of CEQA review of that public project.'" *Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116, 138. CEQA is violated wherever an agency "has committed itself to the project as a whole or to any particular features, so as to effectively preclude any alternatives or mitigation measures that CEQA would otherwise require to be considered, including the alternative of not going forward with the project." *Id.* at 139. Here, by pre-emptively destroying the special-status brodiaea colony, the County "effectively preclude[d]" the alternatives of (1) "not going forward with the project" and (2) relocating the Project to another location to eliminate impacts on brodiaea. *Id.* Therefore, the County violated CEQA. F-42

There is no scientific basis for the Project proponent's view that transplantation is an effective means of mitigating impacts to the rare native plants found onsite. All of the scientific evidence confirms to the contrary that translocation is risky and ineffective. In 1998, "[a]fter scientifically reviewing constraints and uncertainty inherent in native plant translocation efforts," the California Native Plant Society determined to "oppose[] the use of salvage and transplantation as mitigation for impacts to rare and listed plants, based on expert consultation of its Rare Plant Scientific Advisory Committee. . . ." Exhibit G at 2-3. Similarly, a DFG "review of 53 transplantation projects involving 40 special-status plants" found that "only 13% of translocation projects were assessed as successful." *Id.* at 3. Moreover, a U.S. Fish and Wildlife Service "5-year review of a related federally listed *Brodiaea* species . . . determined that translocated populations have highly variable and limited rates of success." *Id.* Finally, a recent federal "review of conservation measures for a Brodiaea relative . . . for the U.S. Forest Service, concluded that inherent risks exist in the process of translocation" and that "transplanting was considered to be much riskier and less desirable than conserving the species in place." *Id.* In sum, "[t]here appears to be no scientific or practical technical support for a presumption of compensatory mitigation success in translocation." *Id.* "Proposals for translocation of rare plants without scientific basis is more rationalization of destruction than mitigation methodology. [Citation.]" Exhibit G at 2. F-43

C. The Project Will Significantly Impact the Northern Spotted Owl, a Protected Species.

The Northern Spotted Owl, a species listed as threatened under the Endangered Species Act, is known to exist in the immediate vicinity of the Project. Assessment of the Project's impacts on this species has been inadequate in three respects, as set forth below. F-44

First, the spotted owl surveys were conducted pursuant to an obsolete 1992 protocol rather than the appropriate updated protocol, which was adopted by the United

States Fish and Wildlife Service on February 7, 2011.[15] Exhibit E at 8. (The surveys were conducted three months later, in May 2011.) Similarly, outdated guidelines were used to evaluate the noise disturbance that the Project may cause; 1996 rather than 2006 guidelines were used. *Id.* at 13. Additional studies must be conducted, pursuant to the correct protocols, to ensure their reliability. *Id.* at 8. F-44 cont.

Furthermore, as explained above, the BRR used an incorrect buffer zone to determine the Project's impacts on species present nearby but not on-site. The correct buffer zone "'to apply when determining the survey area around proposed projects that may impact northern spotted owls' for the California coast range . . . is 1.3 *miles*." Exhibit E at 8 (emphasis added). "[I]t is essential that . . . the locations and status of each [Northern Spotted Owl] . . . within a 1.3 mile radius of the project site be evaluated during each year of construction activity." *Id.* F-45

Moreover, while the BRR admits that the "Dusky-footed woodrat . . . utilize[es] habitat on the site," and that this "rodent is the primary prey base of the Northern Spotted Owl," there has been no attempt to ascertain the extent to which nearby northern spotted owls venture on-site to prey upon these rodents. Exhibit E at 4. The BRR's assessment of noise impacts on northern spotted owls is similarly deficient. The BRR *admits* that "*Low* noise levels dominat[e] for much of the year" at the Project site, yet when determining impacts to the northern spotted owl, the BRR "[a]ssum[es] that the ambient noise level before and after construction is *Moderate*." BRR at 100-101 (emphasis added). This mistaken assumption throws the entire analysis of the Project's noise impacts into doubt. F-46 F-46A

The EIR must remedy these deficiencies and disclose, analyze, and mitigate all of the Project's impacts upon the Northern Spotted Owl. F-47

D. **The EIR Must Thoroughly Disclose, Analyze, and Mitigate the Project's Impacts on Listed Salmonids.**

Two federally-protected species, the threatened steelhead trout[16] and the endangered coho salmon,[17] call Mark West Creek home. "Spawning and rearing of both coho salmon and steelhead occur in Mark West Creek." BRR at 35. The Project's potentially disastrous impacts on these critical species have never been substantively analyzed. They must be thoroughly examined now, as discussed below. F-48

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15 *See* http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Recovery/Library/Documents/2011NSOCalSurveyProtocol.pdf

16 *See* 71 Fed.Reg. 834 (Jan. 5, 2006).

17 *See* 70 Fed.Reg. 37160 (June 28, 2005).

1. Mark West Creek Supports Both Coho Salmon and Steelhead.

The National Marine Fisheries Service's *Central California Coast Coho Recovery Plan* classifies "Mark West Creek as a priority basin for protection and recovery with reintroduction targeted for 2009-2019." Exhibit F at 4. Coho salmon are being planted in Mark West Creek by DFG below the Project site as part of a captive breedstock program.[18] *Id.*; BRR at 34-35; *see* Exhibit F at 6 (picture).

Mark West Creek is designated as Critical Habitat for steelhead. Exhibit F at 7; 70 Fed.Reg. 52488 (Sept. 2, 2005). On August 26, 2011, DFG staff captured three steelhead in the North Fork of Mark West Creek. The steelhead were relocated downstream because "rapidly deteriorating instream conditions" made it likely that the steelhead "would perish due to lack of water" if they remained in their current location. Exhibit H (report of DFG biologist); *see also* Exhibit J (pictures).[19] Similarly, albeit more tragically, in 2008 frost protection diversions killed federally listed species at least twice; once, endangered salmon were killed when the creek they inhabited was literally sucked dry. Exhibit 6 to NOWWE's November 5, 2009, comment letter, at 4-5. *Id.*

F-48 cont.

Moreover,

> [c]ontrary to the statement in [the BRR on page 68] that there is "no suitable habitat for steelhead spawning or rearing at the Project site," a gradient map of the upper Mark West Creek watershed shows that there are benches within the optimal range of 1-2% for steelhead spawning and rearing in the North Fork (Figure 9). [¶] Historically, headwater streams such as the North Fork would be extensively used for at least spawning in average and wet years and likely had extensive juvenile habitat in wet years and very wet years.

Exhibit F at 9. Discussions of historic steelhead habitat in the vicinity are presented on pages 7 through 9 of Exhibit F hereto, and pages 3 and 4 of Exhibit 6 to NOWWE's November 5, 2009, comment letter. The EIR must fully analyze the Project's impacts on this critical habitat.

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18 Coho salmon from Mark West Creek are "used in the captive breedstock program" and "were part of the broodstock for the fish being planted." Exhibit F at 4.

19 The BRR relies upon the absence of salmonids during a single visit that occurred *over a week after DFG removed the steelhead from the North Fork of Mark West Creek* as support for some of its conclusions. *E.g.,* BRR at 33 (table). Quite obviously, no steelhead were observed because the few remaining fish able to survive in the rapidly deteriorating conditions were removed by DFG – not because suitable habitat is lacking in the North Fork of Mark West Creek. *Cf.* Exhibits H (report on relocation from North Fork), I (DFG fish presence snorkel survey in Mark West Creek finds three different age classes of steelhead).

2. The Project Will Have Disastrous Impacts on Endangered Salmonids.

a. The Project Will Cause Reduced Flows and Sedimentation, Substantially Impacting Salmonids.

As shown in Parts II and IV of these Scoping Comments, the Project will increase the deposition of sediments into, and reduce surface flows in, Mark West Creek. The Project will accordingly have deleterious impacts on federally-listed coho salmon and steelhead that have never been examined by the County but now must be scrutinized in the EIR. The BRR's "claim[] that the Project has no impact on steelhead and coho salmon Critical Habitat in [Mark West Creek] is not correct." Exhibit F at 13.

The Project will cause erosion and sedimentation, which reduces salmonid survival in numerous ways, as Mr. Higgins explains:

> Excess sediment supply to streams is known to reduce pool frequency and depth (Bauer and Ralph 1999) [but] coho juveniles and older age steelhead juveniles are known to require deeper pools in order to survive. The width to depth ratio of a stream also increases in response to elevated sediment that in turn makes the stream prone to warming, which is adverse for both coho and steelhead (Bauer and Ralph 1999). Fine sediment can also cause decreased bed permeability, which can lead to reduced exchange with the hyporheic zone (Poole and Berman 2000) that is an important cooling mechanism for streams (Winters et al. 1998). Sediment that fills interstitial spaces in the stream bed may also [1] decrease aquatic macroinvertebrate production (Barbour et al. 1999) that are an important food resource for juvenile salmonids and [2] lessen egg survival and successful emergence of fry (McNeil and Ahnell 1964). Suspended sediment can also reduce the ability of juvenile salmonids to feed (Sigler et al. 1984), especially if periods of chronic turbidity are prolonged (Newcombe and McDonald 1991).

F-49 cont.

Exhibit F at 17. Here, "[n]ew impacts associated with the Cornell Winery Project would couple with those already initiated by the previous vineyard project and ris[e] to an unacceptable level of sediment related cumulative effects in the North Fork and in downstream reaches of Mark West Creek, if" the Project is "permitted and developed." *Id.* The EIR must address the Project's impacts "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." Guidelines §§ 15065(a)(3), 15130(a); *see* Pub. Res. Code § 21083(b)(2).

The sedimentation and groundwater pumping associated with the Project will increase temperatures in Mark West Creek, as shown above. As the U.S. Environmental Protection Agency explains, "The temperatures of rivers with smaller volumes equilibrates faster to surrounding air temperature, which leads to higher maximum water

temperatures in the summer." Exhibit F at 17. Mark West Creek is already "highly impaired with regard to its ability to support juvenile coho salmon and steelhead." *Id.* Coho salmon cannot survive in streams whose "maximum floating weekly average water temperature" exceeds 62.2 degrees Fahrenheit or 16.8 degrees Celsius. *Id.*, citations omitted. "[S]teelheadh growth [i]s suppressed by 10% at 17° C and 20%" at "19° C." *Id.*, citations omitted. *Only one site* with hospitable temperatures exists in Mark West Creek and it is located "*just upstream of the North Fork.*" *Id.*, citations omitted. "The problem with the distribution of habitats in Mark West Creek is that the lower reaches where pools are frequent and deep are too warm for coho salmon and older age juvenile steelhead in summer. Upper reaches and tributaries may be cool enough for these at-risk salmonid species, but pool depths restrict carrying capacity." *Id.* at 21. It is crucial that the ability of salmonids to access the cool upper reaches of Mark West Creek not be impaired by the Project's water use.

F-49 cont.

b. Project Impacts Are Particularly Significant Due to the Cumulative Effects of Development in the Watershed.

The Project's significant environmental impacts, discussed above, are exacerbated by existing environmental degradation. "The watershed processes that have created the cold, clear waters of Mark West Creek have been so disrupted that the coldwater ecosystem is at a tipping point," and Project approval could send it over the edge. Exhibit F at 28. The EIR must account for these cumulative impacts. *See, e.g., San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61, 77-79 (holding transportation impacts of Project must be determined with reference to existing overcrowded conditions). "[T]his Project will have irretrievable and irreversible effects on coho salmon and steelhead production immediately downstream and adjacent and with ripple impacts to the entire Mark West Creek aquatic ecosystem." Exhibit F at 27-28.

F-50

Prior impact analysis has ignored the cumulative effects of such degradation. For example, the Todd Engineers' 2006 study simply concluded that "[c]onsidering 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." October 12, 2009, Re-circulated Mitigated Negative Declaration, at 20. The obvious problem with this perfunctory analysis, as noted by the California Department of Fish and Game, is that "in coastal rivers and streams the majority, if not all, of the average annual flow in a watershed occurs during a relatively short period of time (i.e., December to March). Exhibit G to NOWWE's October 8, 2009, comment letter at 2. In other words, the Project may have a significant impact on water flows because there is so little water in the Creek during the summertime – when cool water is most needed in-stream – that any withdrawal at that critical time will have a significant impact. *See* Exhibit A to NOWWE's October 8, 2009, comment letter at 1 (letter from National Oceanic and Atmospheric Administration stating that because the summer/fall flows in Mark West Creek are so low, developments should verify their water sources, which "should not be tied to surface flow without first

evaluating potential impacts on salmonid habitat."). The EIR must consider – rather than ignore – the Project's cumulative impacts. Guidelines §§ 15065(a)(3), 15130(a).

A comprehensive cumulative impact analysis must consider at least four concerns. First, available "evidence strongly suggests that" numerous "reaches" of Mark West Creek "have gone from gaining streams to losing ones due to too much water withdrawal." Exhibit F at 19. A recorded anomaly in pool depth in the second-lowest reach of Mark West Creek "is likely indicative of major cumulative effects [citation] where sediment over-supply and/or increased peak discharges related to upstream or upslope land management have caused pools to fill." *See* Exhibit F at 21. More recent habitat typing "found Critical Habitat for coho salmon and steelhead 'adversely affected by severe sedimentation'"; the 2006 landslide on the Cornell property "clogged" the mainstem of Mark West Creek "with sediment" and "caused pool frequency to diminish to just 20% of the stream by length." Exhibit F at 22. Prior illegal deforestation has also decreased aquifer infiltration and thereby reduced the base flows of Mark West Creek. *Id.* at 11. "The only way to improve conditions is to restore stream flows in headwaters, not further deplete them[,] and to reduce sediment contributions, which is the opposite of what will occur . . . if the Cornell Winery Project is approved and constructed." *Id.* at 21. F-50 cont.

Second, the environmental impacts of the Project are amplified by existing impoundments in the vicinity. Exhibit F at 20-22. "[I]n many cases the[se impoundments] may be filled with groundwater using a pump during the dry season. Since the ponds are usually lined, once water is withdrawn from the aquifer, it is no longer available as a surplus to supply cool water needed for fishes." *Id.* at 22-24. And even if all impoundments were rain-fed, "they would cause complex hydrological effects"; simultaneous filling of reservoirs during the season's first rain impedes salmon spawning. *Id.* at 24. With this background in mind, experts have determined that "the changes that *small* water projects cause to the natural flow regime may play a principal role in limiting valued ecological resources such as anadromous salmonids throughout the region." *Id.* at 25, emphasis added. If approved, the Project's water use will likewise "play a principal role in limiting" the survival of endangered salmonids. *Id.* F-51

Third, the Project's sedimentation impacts will act cumulatively with existing excess sedimentation from roads in the vicinity. The Project vicinity is littered with roads that deposit sediment in Mark West Creek, and the Project's new impervious surfaces will exacerbate such impacts. The EIR must disclose, analyze, and mitigate the Project's sedimentation impacts against a background of extreme degradation. F-52

Finally, the EIR must consider the fact that global climate change will exacerbate the Project's impacts. Climate change will result in increased water scarcity and more variable weather patterns. Exhibit F at 27. Climate change is also likely to exacerbate the cyclical drought period that will begin around 2015-2020, which the EIR must also consider. *Id.* The EIR must address past, present, and reasonably foreseeable future cumulative impacts. Guidelines §§ 15065(a)(3), 15130(a). F-53

The Project will jeopardize the continued existence of listed salmonids and the EIR must disclose, analyze, and mitigate this impact, or the Project must be disapproved. F-54

IV. THE PROPOSED SITE IS GEOTECHNICALLY UNSAFE.

The Project site has not been demonstrated to be geotechnically feasible for development of the proposed Project. Although "the headscarp of [a] landslide . . . encroaches" upon "the proposed building site," detailed geologic mapping of the proposed site and subsurface investigation to establish precise landslide boundaries has never been conducted. Raymond Waldbaum, Geologic Review of Supplemental RGH Geologic Report in Response to Cotton-Shires Review, dated September 9, 2010 ("Waldbaum 2010"), at 6.[20] Because no large diameter borings have been drilled and downhole logged, nothing is known about the geologic structure at depth at the proposed building location and in the adjacent, steep descending slopes. These shortcomings have not been addressed or remedied.[21] There are widespread deficiencies with the geotechnical analysis performed to date, as discussed below. Either the significant geologic impacts that could result from the Project's construction must be disclosed, analyzed, and mitigated to the fullest possible extent, or the Project must be disapproved. Pub. Res. Code § 21002. F-55

A. The Applicant Proposes to Locate the Winery in an Unstable Location Near "Large, Dangerous Landslides,"[22] the Full Extent of Which Are Unknown.

1. RGH's Inadequate 2010 Report Clearly Shows On-site Landslides Near the Winery; Additional Comprehensive Geotechnical Analyses Are Required.

F-56

As documented by geologist Raymond Waldbaum, "landslides are present in the slopes descending northwesterly and southeasterly from the proposed Wine Factory site," as illustrated by Plate 2 of RGH's June 23, 2010, report. Waldbaum 2010 at 4. The

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20 As set forth in section VII of this comment letter, NOWWE requests that the County confirm that Mr. Waldbaum's report is contained within the files of both the County and its EIR consultant.

21 Geotechnical reports submitted in support of the Project include but are not limited to: (1) a June 23, 2010, report by RGH Consultants, Inc. ("RGH 2010") encompassing the winery site; (2) a July 2, 2010, so-called peer review of RGH's 2010 report by Cotton, Shires and Associates ("CSA 2010"); (3) an October 11, 2011, report by RGH on the planned rainwater storage tanks ("RGH 2011"); (4) peer reviews of the RGH tank site reports by Cotton, Shires and Associates rejecting the RGH work; and (5) a preliminary grading and drainage plan by Atterbury & Associates, dated October 20, 2011.

22 Waldbaum 2010 at 3 (capitalization altered).

locations of these "landslide scarps and landslide masses" are shown by RGH as "approximate" because detailed subsurface investigation has not occurred. *Id.* The inadequate review that has been done reveals extreme hazards that warrant further investigation.

The proposed winery sits near multiple landslides. "On this site, no one disputes that there are large, dangerous landslides present. These landslides are shown on California Division on Mines and Geology Special Report 120, reports by Raymond Waldbaum and finally . . . reports by RGH themselves. . . . [T]he landslides are also acknowledged in written geotechnical reviews by Kleinfelder and Cotton Shires." Waldbaum 2010 at 3.

For example, RGH 2010 Plate 2 indicates the presence of "a landslide whose headscarp coincides with the ridge line where the Wine Factory is proposed for construction." Waldbaum 2010 at 4. Yet RGH 2010 "derive[d] the incredible finding that the ridge line is stable." Waldbaum 2010 at 4. Either "the map is accurate [and] the ridge is not stable [or] the ridge is stable [and] the map is not accurate. *This contradiction must be resolved*," but it has not been. *Id.* (emphasis supplied).

RGH's 2010 report "casually disregard[s]" the potential for these landslides that "flank[]" the Project to "enlarg[e] . . . in an upslope direction," thereby "consum[ing] the proposed building site itself[.]" *Id.* at 7. This common process is called "headward enlargement." *Id.* This potentially significant impact must be examined, not ignored. F-56 cont.

RGH's 2010 report fails to include necessary data. For example, no large-diameter borings were presented. *Id.* at 2. Large-diameter borings are needed because the small-diameter core boring logs for the site reveal that the soils "excavated in the *immediate vicinity of*" the Project site contain "materials that either *are* landslide debris or materials that are *indistinguishable from* landslide debris." *Id.* at 5 (emphasis supplied). Indeed, the core samples were "so weak that they could not even be placed into . . . boxes without disintegrating." *Id.* "High strength, intact bedrock was **not** encountered in the borings." *Id.* (emphasis supplied).

RGH 2010 concludes that the materials in the core borings taken from the winery site possess a high factor of safety against landsliding, but this determination cannot be reconciled with the evidence of landslides on-site. Waldbaum 2010, at 4-5. "Stable sites simply are not covered with large landslides, and sites that are covered with large landslides simply are not stable." *Id.* at 5. Despite this evidence of instability, RGH "has thus far failed to perform" a "fundamental feasibility analysis in accordance with the investigative procedures specified by [Cotton, Shires and Associates ("CSA")] in its . . . review and in CGS Special Publication 117A." *Id; see also* CSA 2010 at 2 ("comprehensive quantitative slope stability analyses are not necessary").

These geotechnical problems have been repeatedly ignored in past analyses of landslide risks, which omitted mention of on-site landslides. *See, e.g.,* August 2010 MND at 20, 21. A "comprehensive investigation and analysis of the geologic stability of

the entire project area and all aspects of the proposed changes in use" has never been completed or provided to the public. Exhibit C at 2. As such, "the underlying issue of site stability remains unresolved." *Id.* The forthcoming EIR must provide a sitewide analysis of the Project site's stability that is based on detailed subsurface investigation yielding data about the lithology, geologic structure at depth, and three dimensional geometry of all landslides near proposed structures. The EIR also must mitigate the risks posed by the siting the Project next to a landslide mapped, but not thoroughly investigated, by RGH.

F-56 cont.

Landslides and sedimentation directly degrade habitat of fish and wildlife including endangered species. It is imperative that the geotechnical hazards at the Project site are fully studied and appreciated before the Project moves forward. Otherwise, excessive sedimentation or avoidable landslides could result from mitigable Project conditions. To this end, "it is critical that the geologic map" in the EIR "include an accurate depiction of all of the landslides that apparently exist throughout the site as well as all geologic data obtained previously and geologic data obtained specifically to evaluate the proposed grading," since "this [h]as not [been] done in this case." *Id.* at 3.

2. CSA's So-called "Peer-Review" of RGH's Report Does Not Demonstrate that the Project Site Has "Favorable Ground Stability" or a "Low Potential for Seismic Hazards."

CSA, conducting its peer review of the deficient RGH 2010 report discussed above, circularly concluded that additional studies of the stability of the Project site were unwarranted because RGH determined the Project site to be stable. In doing so despite the lack of data in RGH's report, CSA in essence declared the stability of the site before it was even investigated. As shown, there is no evidence to support such a conclusion of stability. All of the (insufficient) data that has been gathered to date shows that the site is *not* stable and is instead underlain by landslides. Moreover, the site is likely to be strongly affected by groundshaking in the probable event of a future earthquake. California Geological Survey ("CGS") Special Publication 117A directs that "[s]lope stability analysis will generally be required for . . . slopes that, like this one, possess unusual geologic conditions such as . . . evidence of prior landslide activity." Waldbaum 2010, at 6. Mr. Waldbaum *has never before encountered a site more clearly matching the "evidence of prior landslide activity" criterion* in Special Publication 117A than the Project site *in his entire 41 year career*. Waldbaum 2010 at 6 (emphasis added).

F-57

Nonetheless, CSA erroneously concluded that this essential geologic stability analysis was unnecessary. Because landslides are abundant on the site according to every geologist who has ever examined it, including the Geoservices Group, Waldbaum, RGH, Kleinfelder and CSA, and because the site is predicted to be impacted by strong seismic ground shaking during the Project's life, additional stability analyses are required by CGS Special Publication 117A, and these studies must be included in the EIR to allow public review.

Furthermore, to the extent that CSA's conclusion is based upon its "own site geologic mapping" (CSA 2010 at 2) this would be improper because CSA's "own . . . mapping" was not made available for public review. Mr. Waldbaum was informed by this Project's County Planner that "there is no" such "geologic map." Waldbaum 2010, at 6. CSA cannot properly rely upon a nonexistent map. And if such a map exists, it *must* be made available for expert assessment and public review, or it may not be relied upon during preparation of the EIR. *Vineyard, supra,* 40 Cal.4th at 442.

F-57 cont.

3. The Rainwater Storage Tanks Are Proposed for a Geologically Unstable Location.

RGH prepared a supplemental analysis supposedly demonstrating the geologic stability of the proposed rainwater harvesting tank site, dated October 21, 2011, and hereafter referred to as "RGH 2011." RGH's 2011 report is based on inadequate data, yet it nonetheless affirmatively shows that the proposed tank site is *un*stable, as Mr. Waldbaum has shown. *See* Exhibit B. Multiple peer reviewers have found that the proposed tanks are underlain by melange (a weak mixture of completely weathered and extremely closely fractured disparate rocks and soil) and *not* by bedrock. Exhibit N at 1; Exhibit K at 1-2 (noting landslide-prone soils). RGH has prepared two geologic and geotechnical reports about the tank site and each of these reports has been found to lack critical data by both Waldbaum and CSA. No supplemental work on the tank site has been provided for public review. The tank site has not been shown to be geologically stable, and RGH failed to properly investigate the tank site despite being given specific written recommendations on how to do so by both Waldbaum and CSA.

RGH's 2011 report lacks critical data and includes neither a geologic map nor any geologic cross-sections. Exhibit B at 2; Exhibit N at 2 ("the consultant did not include an engineering geologic map or cross section with the referenced report to substantiate their conclusion" that "'there is no evidence of landsliding'"). As shown above, the inadequate piecemeal mapping that has been done clearly shows that the Project site is underlain by landslides, including an active landslide below the residence at 245 Wappo Road. But because the RGH 2011 report "does not include a geologic map[,] . . . the locations of these numerous landslides in relation to the proposed tank site [are] not disclosed" or known. Exhibit B at 2. The Applicant's geology consultants "did not provide a description of the results of their aerial photograph interpretation or a photogeologic map showing that interpretation. If they had compiled published landslide maps of the site, it was not discussed in the report, nor was a compilation map attached to the report." Exhibit N at 2. Without this crucial information, the report is "ineffective in evaluating the geologic stability of the proposed tank site." Exhibit B at 2; *see also* Exhibit N at 2-3 (specific recommendations about contents of recommended supplemental report remedying these deficiencies).

F-58

Similarly, RGH's 2011 report claims to be based upon "classification and laboratory testing" in addition to "visual observation," but no test data – or stability analysis resulting from that data – were included with the report. Exhibit B at 2; Exhibit N at 2 ("We recommend that the consultant provide a supplemental report with additional

information explaining the basis of their conclusions. . . ."). Apparently, no such analysis was completed. "Thus, the geologic stability of the proposed tank site is simply unknown." Exhibit B at 2.

Moreover, the limited subsurface investigation that *was* conducted itself indicates that the soil underneath the tank site is *not* stable or strong but instead "soft, . . . highly weathered to completely weathered, extremely closely fractured, and weak." Exhibit B at 2, quoting RGH 2011; Exhibit N at 1-2 ("the site is underlain by melange of the Franciscan Complex" that "[a]t shallow depths" of less than "42 feet" are "intensely weathered"). In Mr. Waldbaum's expert opinion, this data indicates that the tank site is underlain by "the *same* type of material that has" previously "*failed*[,] forming large landslides throughout the site." Exhibit B at 2, emphasis added.

In sum, RGH's 2011 report omits data critical to understanding the tank site's stability, and the limited and inadequate investigation that was performed clearly indicates that the proposed tank site is unstable and proximate to numerous landslides.

F-58 cont.

4. The Leach Field Is Improperly Sited.

The leach field for the disposal of domestic wastewater is inappropriately located and has the potential to cause significant environmental impacts. The deficiencies with the relocated leach field fall into three areas.

a. The Leach Field Site May Be Geotechnically Unstable.

Improperly sited leach fields can cause extreme environmental damage. In 2005, a landslide below an improperly sited leach field at 245 Wappo Road discharged 10,000 cubic yards of debris into a tributary of Mark West Creek. Exhibit C at 2. "Moisture added by disposal of sewage effluent was a likely contributing factor" to this landslide. *Id.*[23] Here, while water from the leach field has "the potential for . . . contributing to either a landslide or debris flow," the "potential impact of water discharged from the leach field on the stability of the slopes below the leach field has not been assessed." Jackson Report at 12.

F-59

The slopes beneath the proposed septic field are very steep, and of an unstable, "eroded nature." *Id.* In fact, the "site appears topographically and geologically indistinguishable from the septic drainfield site at the 245 Wappo Road residence" whose

23 While the applicant has in the past asserted that the landslide at 245 Wappo Road "was a 'natural' event," the "project proponents fail to reconcile that assertion with . . . information in PRMD files showing the presence of a septic drainfield *immediately* upslope of the landslide headscarp" and the fact that the "landslide [does] *not* extend[] outside of the area directly beneath the drainfield." Exhibit A at 4 (emphasis supplied). "To call this a coincidence is to deny what is known by geotechnical professionals about the destabilizing effects of increased soil moisture from . . . an inappropriately sited septic drainfield." *Id.*

improper location caused a massive landslide. Exhibit A at 3. Moreover, the proposed leach field is underlain by landslides, as even RGH's inadequate geologic investigation demonstrates. *Id.* While RGH asserted that slope failure only occurred within road fill," not a landslide, NOWWE's expert geologist noted that the "location of the slope failure is outside of the area of road fill on the RGH maps." *Id.*

These factors combine to further underscore the leach field's potential to trigger a landslide or debris flow. *Id.* Any such ground failure "would adversely impact water quality and fish habitat." Jackson Report at 12. The EIR must disclose and analyze such impacts, and should mitigate them by relocating the leach field to a stable location if the Project is approved.

F-59 cont.

b. The 3,000 Foot Pipeline Associated with the Leach Field Has the Potential to Cause Significant Environmental Impacts.

"The pipeline connecting the wastewater treatment system to the leach field would be placed in Wappo Road and is about 3,000 feet long." Jackson Report at 12. Prior environmental reviews have "not assessed the environmental impacts of constructing the wastewater disposal pipeline in the road." *Id.* For example, it is unknown how deep the pipeline will need to be buried to prevent it from being damaged from truck traffic on Wappo Road. *Id.* It is quite likely that the pipeline will need to be placed in bedrock, which will necessitate both exporting the excavated material and importing back-fill material. The impacts of the associated truck traffic have not been determined. *Id.* Nor have the measures to control dust and erosion during pipeline construction been disclosed. Additionally, unless mitigation measures are implemented, the back-filled material is likely to settle and capture runoff from the road surface. *Id.* at 13. This "will make a channel that will concentrate road runoff and erode the road surface," and will also "be a source of sediment to Mark West Creek and its tributary," both of which already suffer chronic problems from excess sedimentation. *Id.* at 13. The EIR must disclose, analyze, and mitigate each of these impacts.

F-60

Furthermore, the pipeline will rise over 200 feet from the proposed winery site. *Id.* at 13. Yet there has been no discussion of the environmental consequences if the lift pump were to fail. Sewage spills from failed pump lifts are common. In addition to pump failure, electric pumps will not operate during power outages unless they are served by generators. Similarly, there has been no discussion of the risks or consequences of pipeline rupture. A sewage spill would have disastrous environmental consequences. The EIR must disclose, analyze, and mitigate this impact as well.

F-61

c. The Potential Water Quality Impacts of the Leach Field Site Must Be Ascertained and Disclosed.

F-62

The EIR must provide information about the leach field's potential water quality impacts. As mentioned, a sewage spill is possible due to lift pump failure. Moreover,

nearby wells may draw effluent from the leach field. *See* NOWWE September 21, 2010, letter at 12. The EIR must analyze and mitigate these significant impacts. F-62 cont.

B. **Potential Seismic Risks Must Be Addressed.**

The Project poses substantial seismic risks. Even the applicant's geologists recognize that the Project site "is within an area affected by strong seismic activity" and that "strong ground shaking [is] predicted to impact the site during the life of the [P]roject." RGH 2010 at 8, 10. Although RGH concluded that the site is unlikely to be affected by *surface fault rupture* because the Project site is not *on top of* a known earthquake fault, this fact does not and cannot support a conclusion that the site is unlikely to be affected by *strong seismic ground shaking* from a *nearby* fault. *Id.* at 8; *cf.* August 2010 MND at 21 (referring reader to discussion of fault *rupture* risks for assessment of risks due to strong seismic ground *shaking*, yet no discussion of the latter appears with the former). The EIR must not make a similar error; the environmental consequences of that anticipated "strong ground shaking" upon users of the Project – which could include the reactivation or headward enlargement of existing landslides, or the formation of new landslides – must be disclosed, analyzed, and mitigated. F-63

Relatedly, the applicant proposes to use side hill fills, which have a tendency to fail during seismic activity – as experienced in the 1994 Northridge Earthquake. *See* Exhibit C at 4 & Reference 22 therein. The EIR must disclose, analyze, and mitigate this impact.

V. THE EIR MUST DISCLOSE, ANALYZE, AND MITIGATE THE PROJECT'S TRAFFIC IMPACTS.

The Project involves vast excavation. Depending on final Project configuration, as many as 3,400 to 4,500 truck trips could be required to export all of the graded material, if the swell factor[24] is accounted for in the EIR. Waldbaum 2010 at 8. The truck traffic will have air quality impacts. St. Helena Road, which these trucks will be required to traverse, "is a narrow, very winding, rural mountain road. Large trucks have great difficulty negotiating its tight, blind curves without crossing the double centerline, endangering oncoming vehicle traffic, bicyclists, and pedestrians." Waldbaum 2010 at 8. Furthermore, the pavement along St. Helena Road is in an extremely deteriorated condition with abundant potholes and cracked and buckled asphalt. Budget constraints have rendered road maintenance infrequent at best. The EIR must disclose, analyze, and mitigate the consequences of unleashing this cavalcade of trucks upon an already unsafe and highly deteriorated road. F-64

24 The swell factor is the multiple by which excavated soil increases in volume compared to its original, compacted size.

VI. THE EIR MUST NOT UNLAWFULLY DEFER IMPACT ANALYSIS OR THE FORMULATION OF MITIGATION MEASURES

Throughout the environmental review process, impact analysis and the identification of mitigation measures has been unlawfully postponed until after Project approval. For example, whether bats are present on-site is unknown, as are the means by which impacts on bats would be mitigated. Similarly, erosion control measures planned for construction have not been identified. But CEQA mandates public involvement in the identification and formulation of mitigation measures and prohibits agencies from delaying impact analysis until after Project approval.

"[R]equir[ing] . . . the . . . adopt[ion of] mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA." *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 306. While it is true that project approval can be conditioned on compliance with known and measurable environmental standards, this is *only* true because compliance with such standards is based on "specific performance criteria articulated at the time of project approval." *Sacramento Old City Ass'n v. City Council* (1991), 229 Cal.App.3d 1011, 1028 ("*SOCA*"). Deferred mitigation is thus *only* proper where an agency "recognize[s] the significance of the potential environmental effects, commit[s] itself to mitigating their impact, and articulate[s] specific performance criteria." *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1395. And even where these requirements are met, deferral of mitigation is *nonetheless* allowed *only* "for kinds of impacts for which mitigation is known to be feasible, but where practical considerations prohibit devising such measures early in the planning process (*e.g.*, at the general plan amendment or rezone stage)." *SOCA*, *supra,* 229 Cal.App.3d at 1029. As such, the formulation of mitigation measures may not be deferred unless *the EIR itself* demonstrates that mitigation is feasible.

F-65 cont.

Here, analysis of the Project's impacts and the formulation of mitigation measures has repeatedly been unlawfully postponed until after Project approval. For example, the BRR states that "roosting bats and/or nesting birds may occur in the Project site" and that "mitigation measures should be implemented prior to construction to avoid impacts to nesting birds, bat maternity roosts and special-status birds and mammals." BRR at 97. As discussed above, the BRR's discussion of bats is based upon "existing distributional information" – "which is scant . . . in reference to bats" – rather than comprehensive on-site surveys. Exhibit E at 14. "[C]omprehensive surveys, especially of birds and bats, should be conducted as part of the initial biological assessment rather than as 'mitigation measures.'" *Id.* at 12. Similarly, the identification of erosion-control measures was deferred. BRR at 96 (unidentified "best management practices . . . will minimize sediment runoff during construction"). Mitigation measures must be identified in the EIR *before* Project approval, so as to allow the public to comment on their efficacy.

VII. THE EIR CONSULTANT MUST BE PROVIDED WITH ALL PERTINENT DOCUMENTS.

The County has selectively provided the EIR consultant with an incomplete sampling of documents in the record. NOWWE hereby requests that the County confirm that the following documents (1) are present in the County's files and (2) were sent to the EIR consultant. Certain of these documents might be filed under the Project's previous reference number, UPE 03-0092. If either the County or the EIR consultant lacks any document listed below and thus needs an additional copy, please contact NOWWE or the undersigned.

- May 2000, *Journal of Registered Professional Foresters,* Licensing News, discipline taken against Mr. Glenn Edwards, RPF 2363;
- October 6, 2000, memorandum from Department of Fish and Game, Draft Policy Guidelines for Anadromous Fish Habitat;
- September 10, 2001, North Coast Regional Water Quality Control Board comments on Timber Harvest Plan;
- August 17, 2004, letter from PRMD to RGH regarding report discrepancies;
- 2005 video of North Fork Steelhead;
- January 31, 2005, *Engineering Geology Overview*, by Raymond Waldbaum;
- June 2, 2005, *Mapped Landslides*, by Raymond Waldbaum;
- June 6, 2005, comment letter from Kimberly Burr to Board of Supervisors;
- June 7, 2005, comment letter from Community Clean Water Institute to Board of Supervisors; F-66
- June 9, 2005, *Source and Validity of "Geologic Map" Presented by Planner Swedenborg*, by Raymond Waldbaum;
- June 21, 2005, comment letter from David Katz, Trout Unlimited, to Board of Supervisors;
- July 26, 2005, letter from Kimberly Burr to Sigrid Swedenborg, PRMD;
- March 29, 2006, Sonoma County PRMD, Permit History;
- July 18, 2006, comment letter from Kimberly Burr to Board of Supervisors;
- December 11, 2006, *Engineering Geology Overview of Landslide,* by Raymond Waldbaum;
- January 29, 2007, *Review of RGH Landslide Report*, by Raymond Waldbaum;
- November 1, 2007, *Geologic Issues Affecting Velocity and Flow Measurements*, by Raymond Waldbaum;
- December 31, 2007, letter from Kimberly Burr to County Counsel;
- January 21, 2008, *Geologic Review of Geologic and Geotechnical Reports*, by Raymond Waldbaum;
- June 15, 2008, letter from Ali Farhat regarding water rights at neighboring parcel;
- August 1, 2008, letter and photographs from Kimberly Burr to Mr. Parkinson regarding unpermitted grading;
- September 25, 2008, *Summary of Geologic Issues*, by Raymond Waldbaum;
- November 5, 2008, North Coast Regional Water Quality Control Board request for environmental assessment;

- November 11, 2008, Geologic Review of Updated RGH Geologic Report, by Raymond Waldbaum;
- November 12, 2008, comment letter from Kimberly Burr;
- November 12, 2008, package from Kimberly Burr with twelve attachments;
- November 12, 2008, comment letter regarding sedimentation by Dr. Stacy Li;
- November 13, 2008, Friends of Mark West Watershed, Bill Blake photographs of turbid water;
- November 24, 2008, Charles Armor, Department of Fish and Game, comments concerning sediment;
- November 25, 2008, North Coast Regional Water Quality Control Board, comments on Mitigated Negative Declaration and request for full environmental assessment, and photographs;
- July 28, 2009, *Engineering Geologic Update of Landslide*, by Raymond Waldbaum;
- October 1, 2009, Geologic Review of RGH Report dated September 21, 2009, by Raymond Waldbaum;
- October 8, 2009, comment letter from the Law Offices of Stephan C. Volker to the Board of Supervisors and Board of Zoning Adjustments (with exhibits);
- November 5, 2009, comment letter from the Law Offices of Stephan C. Volker to the Board of Supervisors and Board of Zoning Adjustments (with exhibits);
- November 11, 2009, comment letter from the Law Offices of Stephan C. Volker to the Board of Supervisors and Board of Zoning Adjustments (with exhibits);
- November 11, 2009, comment letter from Kimberly Burr regarding cumulative impacts;
- February 10, 2010, comment letter from the Law Offices of Stephan C. Volker to Dave Hardy regarding scope of peer review;
- February 24, 2010, comment letter from the Law Offices of Stephan C. Volker to the Board of Supervisors and Board of Zoning Adjustments (with exhibit);
- March 31, 2010, comment letter from the Law Offices of Stephan C. Volker to Dave Hardy and Board of Zoning Adjustments (with exhibits);
- August 31, 2010, comment letter of Dr. Stacy Li;
- September 9, 2010, *Geologic Review of Supplemental RGH Geologic Report*, by Raymond Waldbaum;
- September 16, 2010, Report by Dennis Jackson, Hydrologist;
- September 21, 2010, *Peer Review of "Biological Resources Assessment,"* by Dr. Peter Baye; and
- September 21, 2010, comment letter from the Law Offices of Stephan C. Volker to the Board of Supervisors and Board of Zoning Adjustments.

F-66 cont.

VIII. CONCLUSION

The Project will cause significant adverse impacts to the environment in the numerous respects discussed above. The EIR must disclose, analyze, and mitigate each of these impacts. NOWWE requests that the County confirm that its files and the files of its EIR consultant contain the documents referenced above. F-67

Thank you for considering our views on this important matter.

Very truly yours,

Stephan C. Volker
Attorney for New-Old Ways Wholistically
Emerging and other concerned residents
of Mark West Creek watershed

EXHIBIT A

The Engineering Geologist
Since 1969
RG 3142 CEG 923
7945 St. Helena Road Santa Rosa, CA 95404
Phone 707-539-2577
Fax 707-539-5773

February 1, 2011

NOWWE
7768 St. Helena Rd.
Santa Rosa, CA 95404
Attention: Mr. Casey Caplinger

Subject: **Engineering Geologic Review of Proposed Stormwater, Domestic Waste and Process Wastewater Disposal, Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041.**

INTRODUCTION

As requested, I have prepared this report to describe the results of my review of proposed stormwater and wastewater disposal on the subject site The purpose of the review was to check whether the rainfall estimates are consistent with rainfall data for the immediate area and to check whether the proposed stormwater and wastewater disposal structures are geologically feasible.

The scope of work included the following tasks:

1. Review of *Storm Water Calculations for UPE07-0008, Cornell Winery, 245 Wappo Road, Santa Rosa, Ca., APN. 028-260-041* dated December 15, 2010, by Atterbury & Associates.

2. Review of *Mitigation Plan For Stormwater, Domestic Waste, And Process Wastewater, For UPE07-0008, Cornell Winery, 245 Wappo Road, Santa Rosa, California, 95404, Assessor's Parcel No. 028-260-041,* 6 sheets dated December 14, 2010, by Atterbury & Associates.

3. Review of the referenced regional geologic, landslide and debris flow maps prepared by the California Division of Mines and Geology (CDMG) now known as the California Geological Survey (CGS), the United States Geological Survey (USGS)

RAINFALL ASSUMPTIONS

Rainfall "Data" used in the Atterbury *Storm Water Calculations* (Reference 1) are ↓F.A-1

obtained from regional maps that do not reflect the high-rainfall microclimate of the project site. Rainfall measurements made at the Doerkson Ranch at nearby 7125 St. Helena Road over a period of decades indicate that the actual rainfall is up to 6 times the rainfall quantity used by Atterbury. For example, in the "New Year" storm event of 2005-2006 the following 24 hour rainfall quantities were recorded at Doerkson Ranch:

December 18, 3.9 inches.
December 22, 4.3 inches.
December 29, 4.5 inches.
Decmeber 30, 5.5 inches
January 1, 2.3 inches.

The Atterbury *Storm Water Calculations* (Reference 1) and *Mitigation Plan For Stormwater, Domestic Waste, And Process Wastewater* (Reference 2) would have value only if they are based on actual site conditions, rather than a map that disregards the microclimate of the site. Sites respond to actual field conditions, not to generalizations shown on regional maps.

That means that the stormwater discharge devices discussed in the following paragraphs will probably discharge up to 6 times the concentrated runoff quantity indicated by Atterbury, during the lifetime of the project.

F.A-1 cont.

GEOLOGIC ISSUES

Geologic, slope stability, landslide and debris flow hazard maps prepared by the California Division of Mines and Geology (CDMG) (now called California Geological Survey, CGS) and by the United Stated Geological Survey (USGS) show the proposed project to be located in an area of abundant landslides and debris flow hazards. In fact an active landslide, apparently triggered by disposal of sewage effluent from a single family dwelling onto a natural slope on the project site (245 Wappo Road), is a stark reminder of the inherent geologic instability of the site.

F.A-2

According to sheets C3 and C4 of the Atterbury plan dated December 14, 2010, stormwater will be discharged onto natural slopes in this geologically unstable area using devices called "Rain gardens" and "Vegetated rock diffusers".

The "Rain gardens" are swales traversing across natural slopes into which water will be discharged and allowed to soak into the underlying soils. In my personal experience in hillside grading as an Engineering Geologist I have seen slope failures triggered by this exact situation. In the instances I am familiar with a paved drainage swale traversing a manufactured slope cracked, allowing runoff to soak the slope below the cracked swale. In the case of the proposed "Rain Gardens" that condition will be created intentionally on a site that is already known to be geologically unstable

F.A-3

from the abundant ancient landslides and an active landslide that are on the site.

It is likely that the proposed "Rain gardens" will introduce concentrated water into slopes with the potential result of inducing debris flows and landslides that may deposit debris into adjacent water courses, as happened below the residential septic system at 245 Wappo Road. In defiance of all that is known about the causes of slope instability, it is actually proposed (Sheet C3 of the Atterbury plan Reference 2) to place one of these "Rain Gardens" at the top of a proposed side-hill fill slope immediately west of the proposed Winery Support Building. Proper grading design seeks to direct water away from fill slopes, not towards them. The exact opposite is proposed here!

F.A-3 cont.

The "Vegetated rock diffuser" is a four inch diameter perforated plastic pipe, like a septic system drain pipe, placed on the ground surface and then covered with 3/4 inch "Drain rock". The "Drain rock" will be placed over the perforated plastic pipe and will, therefore, perform no drainage function and will be a cosmetic feature only.

The slope adjacent to the proposed "Vegetated rock diffuser" exists at a gradient of approximately 2:1 (horizontal:vertical) according to the Atterbury plan (Reference 2). At this steep gradient, any added moisture will have the potential to trigger slope failure, just as the "Rain gardens" will.

Sheet 1 of the Atterbury plan (Reference 2) indicates that, like the proposed stormwater disposal, it is proposed to dispose of wine factory sewage effluent onto a steep descending natural slope at a site designated as 580 Wappo Road. This site appears topographically and geologically indistinguishable from the septic drainfield site at the 245 Wappo Road residence where a landslide with a volume estimated at 10,000 cubic yards by NCRWQCB personnel formed below the drainfield and contaminated the adjacent Class II tributary to Mark West Creek and Mark West Creek itself. It is completely inappropriate to place another septic drainfield onto a steep slope in close proximity to a very similar slope that failed very recently, apparently due to sewage effluent adding to naturally occurring soil mositure.

F.A-4

The project geotechnical consultant, RGH, has submitted conflicting information concerning the 580 Wappo Road septic drainfield site, initially indicating that a slope failure is present there, then later attempting to state that the slope failure is only within road fill. The location of the slope failure is outside of the area of road fill on the RGH maps. Thus this issue is unresolved and is, in any event academic. The prevalence of landsliding throughout the site indicates that destabilizing features like septic drainfields and other structures that add concentrated water should be avoided on all of the slopes to avoid triggering landslides and protect water quality in adjacent drainage courses.

Project proponents have argued in the past and probably will argue again that the

landslide at 245 Wappo Road was a "Natural" event. However, project proponents fail to reconcile that assertion with:

1. Information in PRMD files showing the presence of a septic drainfield immediately upslope of the landslide headscarp, and

2. The landslide not extending outside of the area directly beneath the drainfield.

To call this a coincidence is to deny what is known by geotechnical professionals about the destabilizing effects of increased soil moisture from sources like poor drainage, leaking swimming pools and, most important to this discussion, an inappropriately sited septic drainfield. F.A-4 cont.

In my professional opinion, preservation of water quality in the drainage courses adjacent to the proposed project requires that no water be added in a concentrated manner to the natural and proposed manufactured slopes above the drainage courses. Any discharge of concentrated water onto these unstable natural slopes and proposed manufactured slopes is geologically infeasible and is simply "Asking for trouble".

PROXIMITY TO DRAINAGE COURSES

In a package of information submitted to the North Coast Regional Water Quality Control Board (NCRWQCB), Atterbury included a color aerial photograph titled *Aerial photograph showing the location of the project site and distance to the two nearest waterbodies and Mark West Creek.* This highly deceptive aerial photograph attempts to create the impression that the closest major natural drainage course is Mark West Creek, an indicated 1695.3 feet from the proposed wine factory site.

Other closer drainage courses, for example the drainage course that is tributary to Mark West Creek that was contaminated by the landslide below the septic system on this site is not labeled on the aerial photograph. This is a very significant drainage course. In fact, in *California Regional Water Quality Control Board North Coast Region Preharvest Inspectiopn Report THP 1-00-411-SON* (Reference 5), NCRWQCB personnel Cherie Blatt, Dave Hope and Andrew Baker point out that this and other watercourses on the site "...should be designated as Class II watercourses...". F.A-5

It is essential to recognize that the aerial photograph provided by Atterbury does not accurately present actual natural drainage features in the project vicinity, but instead attempts to create the illusion that there are no major drainage courses nearby.

SUMMARY

It is my professional opinion that the materials submitted by Atterbury to NCRWQCB do F.A-6

not adequately represent existing geologic hazards, rainfall quantities and drainage patterns in the proposed project vicinity. Therefore the proposed "mitigations" may actually increase geologic instability, threatening water quality in nearby Mark West Creek and its tributaries that flank the site.. F.A-6 cont.

I trust that this review report fulfills your present requirements. If there are any questions about information in this report, or if additional information is required, please do not hesitate to call.

Very truly yours,

Raymond Waldbaum

Raymond Waldbaum
Professional Geologist 3142
Certified Engineering Geologist 923

REFERENCES

1. *Storm Water Calculations for UPE07-0008, Cornell Winery, 245 Wappo Road, Santa Rosa, Ca., APN. 028-260-041* dated December 15, 2010, by Atterbury & Associates.

2. *Mitigation Plan For Stormwater, Domestic Waste, And process Wastewater, For UPE07-0008, Cornell Winery, 245 Wappo Road, Santa Rosa, California, 95404, Assessor's Parcel No. 028-260-041,* 6 sheets dated December 14, 2010, by Atterbury & Associates.

3. *Geology For Planning in Sonoma County* CDMG Special Report 120 , 1980

4. *Map Showing Principal Debris-Flow Source Areas In Sonoma County. California,* USGS Open File Report 97-745E, Sheet 11 of 11

5. *California Regional Water Quality Control Board North Coast Region Preharvest Inspectiopn Report THP 1-00-411-SON* dated February 28, 2001 by NCRWQCB.

EXHIBIT B

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November 1, 2011

Ms. Kimberly Burr, Attorney at Law
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Subject: **Engineering Geologic Review of Report in Support of Proposed Rainwater Tanks, 245 Wappo Road, Sonoma County, California.**

INTRODUCTION

As requested I have reviewed a report dated October 21, 2011 by RGH Consultants in support of proposed rainwater storage tanks on the Cornell site at 245 Wappo Road. The purpose of the review was to determine whether RGH has demonstrated the geologic stability of the proposed tank site.

The results of my review indicate that RGH has completely failed to demonstrate the geologic stability of the proposed tank site. RGH has repeatedly demonstrated a lack of ability to recognize the adverse geologic conditions on the Cornell site. Details of this situation are presented in the following section of this report. F.B-1

BACKGROUND INFORMATION

The Cornell site has been the object of geologic investigations by RGH and professional peer reviews by me, JR2 Consulting, Kleinfelder and Cotton, Shires and Associates. The RGH investigations of this site have been ongoing since mid 2004 without achieving a consensus on the geologic stability and suitability for the intended use of the site. The investigations, professional peer reviews and disciplinary action against RGH have generated at least 18 separate documents (See References 1-18 of this report). It is unheard of in my professional experience of over 42 years for a simple site like this one to still be under investigation after the expenditure of so much time, effort and money. F.B-2

The extensive number of these RGH investigations of the same site and professional peer reviews reviews from 2004 through the present, including a notice of substandard practice from the California Board for Geologists and Geophysicists (Reference 2), strongly indicates substandard practice by RGH on this site over a period of many years. The RGH investigation of the proposed tank site does not appear to be any

better. The serious deficiencies in the RGH tank site report dated October 21, 2011 are described in the following section of this report. F.B-2 cont.

RGH REPORT DATED OCTOBER 21, 2011

The RGH report dated October 21, 2011 does not include a geologic map and geologic cross section(s), fundamental components of a geologic and geotechnical report. This is in violation of published standards of geologic practice that have been in force for decades, for example California Division of Mines and Geology *Note 44.* Standard of practice documents issued by the California Division of Mines and Geology (CDMG), now called the California Geological Survey (CGS) are **not** mere irrelevant, voluntary "guidelines" to be ignored at will. These documents are the standard by which geologic work products are judged. This fact is clearly stated in documents issued by the Board for Geologists and Geophysicists included in the Appendix of this report.

According to information resulting from RGH investigations of the site over the better part of a decade, the site is underlain by several large, apparently deep seated landslides, including an active landslide below the residence at 245 Wappo Road. The RGH report dated October 21, 2011 does not include a geologic map so the locations of these numerous landslides in relation to the proposed tank site is not disclosed. This is a critical omission that alone makes the report ineffective in evaluating the geologic stability of the proposed tank site, although other critical deficiencies exist as well in my professional opinion. F.B-3

The subsurface investigation of the proposed tank site apparently encountered the same geologic materials that that formed large landslides throughout this same site (Franciscan Assemblage), described in the RGH boring log in the October 21, 2011 report as "soft, plastic, highly weathered to completely weathered, extremely closely fractured and weak". This does **not** appear to be a description of strong, competent, stable geologic materials. On the contrary, based on the RGH reports, it appears to be the same type of material that has failed forming large landslides throughout the site. If RGH claims that the tank site is stable although it is surrounded by landslides, that assertion must be rigorously proven. Otherwise the claim is mere unsubstantiated conjecture.

The RGH report dated October 21, 2011 states on page 1 that the scope of geologic work for assessing the proposed tank site included collecting "...samples of the materials encountered for visual examination, classification **and laboratory testing** (emphasis added). The RGH report dated October 21, 2011 does not include any laboratory test data, nor does it include any stability analysis that laboratory test data would be used for. Thus, the geologic stability of the proposed tank site is simply unknown, based upon information in the RGH report dated October 21,2011. Absent this information the site may be potentially unstable and adverse impacts may occur.

SUMMARY

In summary, it is my professional opinion that the RGH report dated October 21, 2011 does not include sufficient data and analysis to demonstrate the geologic stability of the proposed tank site for the many reasons stated above. F.B-3 cont.

I trust that this report fulfills your present requirements. If there are any questions about information in this report, of if additional information is required, please do not hesitate to call.

Very truly yours,

Raymond Waldbaum

Raymond Waldbaum
Professional Geologist 3142
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enclosures: References
Appendix

REFERENCES

1. *Groundwater Availability Study, Cornell Winery And Vineyard, Santa Rosa, California* by RGH, dated July 15, 2004.
2. Board for Geologists and Geophysicists letter of substandard practice to RGH dated September 15, 2005.
3.*Engineering Geology Overview, 420 Wappo Road, Sonoma County, California, APN 028-260-047* by Raymond Waldbaum, RG, CEG, dated January 31, 2005
4.*Mapped Landslides, 420 Wappo Road and Vicinity, Sonoma County, California, APN 028-260-047* by Raymond Waldbaum, RG, CEG, dated June 2, 2005.
5. *Preliminary Geologic Study, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006.
6. *Geotechnical Study, Cornell Property Landslide, 245 Wappo Road, Santa Rosa, California* by RGH, dated October 20, 2006.
7. *Geologic Review of Geologic and Geotechnical Reports In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041,* by Raymond Waldbaum, RG, CEG, dated January 21, 2008.
8. *Preliminary Geologic Study Repot, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006 (Updated April 22, 2008)
9. *Review of Preliminary Geologic Study Report, RGH Consultants, Inc. (Updated April 22, 2008), Cornell Winery, 245 Wappo Road, Sonoma County, California* by Kleinfelder, dated July 2, 2008.
10. *Response To BZA Comments, Cornell Winery, 245 Wappo Road, Santa Rosa, California,* by RGH dated September 21, 2009.
11. *Review of Response to BZA Comments (12-15-08) by RGH Consultants, Inc. ((-21-09), Cornell Winery, 245 Wappo Road, Sonoma County, California* by Kleinfelder, dated October 1, 2009.
12. *Geologic Review of Updated RGH Geologic report In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County California, APN 028-260-041,* by Raymond Waldbaum, RG, CEG, dated November 11, 2008.
13. *Review of Reports For Cornell Winery, 245 Wappo Road, Santa Rosa, CA 95404* by JR2 Consulting, Inc, dated October 23, 2009.
14. *Geologic Review of RGH Geologic Report In Response to BZA Comments, Cornell Wine Factory, 245 Wappo Road, Sonoma County* by Raymond Waldbaum, RG, CEG, dated October 23, 2009.
15. *Geologic and Geotechnical Peer review, Proposed Cornell Winery, 245 Wappo Road* by Cotton, Shires & Associates, Inc. dated February 16, 2010.
16. *Geotechnical Study Report, Cornell Winery, 245 Wappo Road, Santa Rosa, California, APN 028-260-041* by RGH dated June 23, 2010.
17. *Supplemental Geologic and Geotechnical Peer review, Proposed Cornell Winery, 245 Wappo Road* by Cotton, Shires & Associates, Inc. dated July 2, 2010.
18. *Geologic Review of Supplemental RGH Geologic Report In Response to Cotton-Shires Review, Cornell Wine Factory, 245 Wappo Road, Sonoma County,* by Raymond Waldbaum, RG, CEG, dated September 9, 2010.

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EXHIBIT C

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November 8, 2011

Ms. Kimberly Burr
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Subject: **Engineering Geologic Review of Preliminary Grading, Drainage, and Erosion Control Plan, Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041.**

INTRODUCTION

As requested, I have prepared this report to describe the results of my review of proposed grading on the subject site The purpose of the review was to determine whether the proposed grading, including drainage and erosion control structures adequately considers geologic conditions on the site.

The scope of work included the following tasks:

1. Review of extensive file data (See references 1-22)
2. Review of *Preliminary Grading, Drainage, and Erosion Control Plan, Cornell Winery, 245 Wappo Road, Santa Rosa, California, 95404, UPE07-0008, Assessor's Parcel No. 028-260-041,* 23 sheets dated 10-20-11, by Atterbury & Associates.
3. Preparation of this report.

Some information in this report, for example my opinions concerning the potential adverse effects of drainage structures proposed to dispose of surface runoff, have been presented in my prior report on the drainage and erosion control plan (Reference 20). The information is repeated here because drainage control is part of grading.

As described in the many reports I have prepared concerning this site since 2005, the site vicinity is believed to be very unstable based on published regional maps prepared by the California Geological Survey and the United Stated Geological Survey, information obtained from analysis of aerial photographs and from topographic features visible on the site. Development of such geologically unstable terrain is very risky. F.C-1

"Piecemealing" of the proposed project design is one of the reasons why so many

geologic site investigations reports have been prepared by The Geoservices Group, RHG and now, according to the Atterbury grading plan, PJC & Associates. Missing in all of these geologic reports is a comprehensive investigation and analysis of the geologic stability of the entire project area and all aspects of the proposed changes in use. Thus, the underlying issue of site stability remains unresolved.

As you are aware, an active landslide is present on this same 245 Wappo Road parcel below the existing residence. The location of this active landslide below the septic drainfield that serves the existing residence indicates that moisture added by disposal of sewage effluent was a likely triggering factor. North Coast Regional Water Quality Control Board personnel have estimated that this active landslide has a volume of 10,000 cubic yards and the landslide discharged debris directly into a tributary of the North Fork of Mark West Creek.

F.C-1 cont.

The following sections of this report describe my opinions concerning the adverse geologic conditions that appear to be present on the site and the proposed grading, drainage and building and tank site elements that appear to disregard apparent geologic instability and appropriate construction practice.

PROPOSED GRADING

Proposed grading includes but is not limited to excavation, fill placement and retaining wall construction to accommodate roadways, parking areas, tank pads, two winery buildings, caves and various drainage structures. The drainage structures consist of devices called "Vegetated rock diffusers" and "Rain gardens" that are intended to dispose of water by discharging it onto natural slopes.

F.C-2

GEOLOGIC ISSUES

Geologic, slope stability, landslide and debris flow hazard maps prepared by the California Division of Mines and Geology (CDMG) (now called California Geological Survey, CGS) and by the United Stated Geological Survey (USGS) show the proposed project to be located in an area of abundant landslides and debris flow hazards. In fact an active landslide, apparently triggered by disposal of sewage effluent from a single family dwelling onto a natural slope on the project site (245 Wappo Road), is a stark reminder of the inherent geologic instability of the site.

F.C-3

Thus, as stated in the Introduction of this report the fundamental geologic feasibility issue of geologic stability appears to remain unresolved at this time.

GEOTECHNICAL CONSULTING SERVICES

When a grading plan is going to be prepared, it is standard land development practice to obtain a geologic and geotechnical report prior to final plan preparation. The

F.C-4

purpose of the report is to evaluate the feasibility of the proposed grading and to prepare specific grading recommendations. The geologic and geotechnical report evaluates the geologic stability of the area(s) of proposed grading and includes a geologic map based on the grading plan. Because prior geologic work on this site has indicated widespread geologic instability, it is critical that the geologic map include an accurate depiction of all of the landslides that apparently exist throughout the site as well as all geologic data obtained previously and geologic data obtained specifically to evaluate the proposed grading. It appears this was not done in this case.

On a geologically unstable site like this one, any construction of habitable structures and/or structures whose failure has potential adverse impacts requires mitigation of the geologic hazards. The mitigation, for example corrective grading such as buttress fill construction, must be shown to be feasible without adversely affecting offsite private property and/or watercourses.

F.C-4 cont.

According to sheet C2 of the Atterbury plan the geotechnical consultant is PJC & Associates, Inc., although prior geotechnical work on this project has been done by The Geoservices Group and RGH. My research of the PRMD project file did not disclose the presence of any PJC report. It is unclear whether or not the lead agency has the PJC & Associates report referenced on Sheet C2.

In any event, the geotechnical consultant should, according to statewide standards of geologic practice, evaluate the geologic stability of all areas where grading is proposed, as well as the geologic and geotechnical feasibility of the proposed manufactured slopes, retaining walls, pads for habitable structures and tanks, roads, parking areas and drainage features. Because of the "piecemeal" manner in which project proponents have presented this project for review, there is no single geologic and geotechnical investigation report that I know of that addresses all of the issues relevant to proposed grading of the site.

With regard to grading to accommodate structures, based on sheets C6 and C7 it appears that pads to support both the winery support building and the rainwater harvest storage tanks will be created by building retaining walls varying in height up to approximately 15 feet and using the retaining wall backfill to support the structures. This grading concept may be an attempt to reduce export of cave excavation spoils by using the excavated material onsite as retaining wall backfill to create building pads.

F.C-5

In practice, it is nearly impossible to achieve fill soil compaction adequate to support structures immediately adjacent to retaining walls because heavy compaction equipment would likely damage the walls and small compaction equipment generally yields inadequate compaction. This can lead to non-uniform soil compaction, future differential settlement and severe building distress. An example of this problem is the ubiquitous pavement deflections on highways at both sides of bridges and

overpasses. Such fill distress has the potential to damage buildings, tanks and plumbing. Where plumbing deflections cause leaks, slope failures can result from saturation of soil by the leakage that is unknown until after failure occurs.

With regard to fill placement, fill placed on potentially unstable slopes can trigger slope failure by surcharging (adding weight to) an already marginal slope. Furthermore, side hill fills as proposed here proved to be an unstable slope configuration in the 1994 Norhtridge earthquake in Southern California (See reference 21).

F.C-5 cont.

With regard to retaining wall materials, according to sheet C18 of the Atterbury plan it is proposed to construct retaining walls of wood. In my experience in hillside grading and construction, wood is not used for retaining wall construction except in the very limited circumstance of remedial slope repairs. Wood is simply not generally considered a sufficiently durable material for new construction of retaining walls.

With regard to "Vegetated rock diffusers" and "Rain gardens", both of these types of structures have the potential to cause slope failures by concentrating increased soil moisture on slopes that already appear unstable, based on what is known about the site (See references 1-22). Furthermore, the "Vegetated rock diffusers" and "Rain gardens"depicted on Sheet C19 of the Atterbury plan would create swales across slopes that would have the effect of intercepting surface runoff from above the "Vegetated rock diffusers" and "Rain gardens" and concentrating it on the slope directly beneath those structures. The proposed "Vegetated rock diffusers" consist of a pipe covered with 3/4" "drain rock". Because this "drain rock" will be placed on the ground surface (a use it is <u>not</u> intended for) it is likely to quickly become clogged with sediment and organic debris and become an impermeable berm intercepting and concentrating surface water on slopes. These potential adverse effects on slope stability cannot be disregarded.

F.C-6

<u>SUMMARY</u>

It is my professional opinion that several aspects of proposed grading and related construction shown on the Atterbury plan dated 10-20-11 require detailed geologic and geotechnical investigation prior to project review by the controlling authorities. Of particular concern are the apparent geologic instability of the site, that still appears unresolved after approximately 11 years of ongoing geologic and geotechnical investigations, and the potential adverse impacts of the grading presently proposed.

"Piecemealing" of the proposed project design is one of the reasons why so many geologic site investigation reports have been prepared since 2000 by The Geoservices Group, RHG and now, according to the Atterbury grading plan, PJC & Associates. Missing in all of these geologic reports is a comprehensive investigation and analysis of the geologic stability of the <u>entire project area</u> and <u>all aspects</u> of the proposed changes in use. Thus, the underlying issue of site stability remains

F.C-7

unresolved. To move forward with project review while so many aspects of the basic stability of the site remain unknown "puts the cart before the horse" and is, in my professional opinion, unprecedented and completely inappropriate. F.C-7 cont.

I trust that this review report fulfills your present requirements. If there are any questions about information in this report, of if additional information is required,

please do not hesitate to call.

Very truly yours,

Raymond Waldbaum

Raymond Waldbaum
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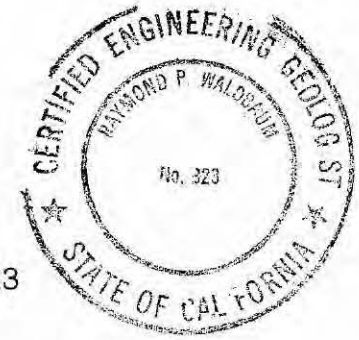

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1. *Engineering Geologic Evaluation, New Vineyard Development, 420 Wappo Road, Sonoma County, California* by The Geoservices Group, dated April 10, 2000.
2. *Groundwater Availability Study, Cornell Winery And Vineyard, Santa Rosa, California* by RGH, dated July 15, 2004.
3. Board for Geologists and Geophysicists letter of substandard practice to RGH dated September 15, 2005.
4. *Engineering Geology Overview, 420 Wappo Road, Sonoma County, California, APN 028-260-047* by Raymond Waldbaum, RG, CEG, dated January 31, 2005
5. *Mapped Landslides, 420 Wappo Road and Vicinity, Sonoma County, California, APN 028-260-047* by Raymond Waldbaum, RG, CEG, dated June 2, 2005.
6. *Preliminary Geologic Study, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006.
7. *Geotechnical Study, Cornell Property Landslide, 245 Wappo Road, Santa Rosa, California* by RGH, dated October 20, 2006.
8. *Geologic Review of Geologic and Geotechnical Reports In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041,* by Raymond Waldbaum, RG, CEG, dated January 21, 2008.
9. *Preliminary Geologic Study Repot, Cornell Winery, 245 Wappo Road, Sonoma County California, APN 026-260-041* by RGH dated May 31, 2006 (Updated April 22, 2008)
10. *Review of Preliminary Geologic Study Report, RGH Consultants, Inc. (Updated April 22, 2008), Cornell Winery, 245 Wappo Road, Sonoma County, California* by Kleinfelder, dated July 2, 2008.

11. *Response To BZA Comments, Cornell Winery, 245 Wappo Road, Santa Rosa,California,* by RGH dated September 21, 2009.
12. *Review of Response to BZA Comments (12-15-08) by RGH Consultants, Inc. ((-21-09), Cornell Winery, 245 Wappo Road, Sonoma County, California* by Kleinfelder, dated October 1, 2009.
13. *Geologic Review of Updated RGH Geologic report In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County California, APN 028-260-041,* by Raymond Waldbaum, RG, CEG, dated November 11, 2008.
14. *Review of Reports For Cornell Winery, 245 Wappo Road, Santa Rosa, CA 95404* by JR2 Consulting, Inc, dated October 23, 2009.
15. *Geologic Review of RGH Geologic Report In Response to BZA Comments, Cornell Wine Factory, 245 Wappo Road, Sonoma County* by Raymond Waldbaum, RG, CEG, dated October 23, 2009.
16. *Geologic and Geotechnical Peer review, Proposed Cornell Winery, 245 Wappo Road* by Cotton, Shires & Associates, Inc. dated February 16, 2010.
17. *Geotechnical Study Report, Cornell Winery, 245 Wappo Road, Santa Rosa, California, APN 028-260-041* by RGH dated June 23, 2010.
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19. *Geologic Review of Supplemental RGH Geologic Report In Response to Cotton-Shires Review, Cornell Wine Factory, 245 Wappo Road, Sonoma County,* by Raymond Waldbaum, RG, CEG, dated September 9, 2010.
20. *Engineering Geologic Review of Proposed Stormwater, Domestic Waste and Process Wastewater Disposal, Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041* by Raymond Waldbaum PG, CEG, dated February 1, 2011.
21. *Engineering Geologic Review of Report in Support of Proposed Rainwater Tanks, 245 Wappo Road, Sonoma County, California,* by Raymond Waldbaum PG, CEG, dated November 1, 2011.
22. *Seismic Performance of Hillside Fills,* by Stewart, J.P., et al, Journal of Geotechnical and Geoenvironmental Engineering, November 2001.

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EXHIBIT D

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January 11, 2012

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Subject: **Engineering Geologic Review of Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California, California by Todd Engineers, dated August 2006.**

INTRODUCTION

As requested, I have prepared this report to describe the results of my review of the Todd water availability report dated August 2006. The purpose of the review was to determine whether the Todd report correctly characterizes geologic conditions at the site. Like a geologic investigation for any purpose, a geologic investigation of groundwater availability must investigate the site to identify all of the geologic issues that are relevant to the issues in question. The Todd report contains no data obtained from an actual site investigation. The significance of this omission is explained in detail in subsequent sections of this review report.

The scope of work included the following tasks:

1. Review of extensive file data.
2. Review of *Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California*, California by Todd Engineers, dated August 2006.
3. Meeting on December 20, 2011 with Mr. Christopher L. Bonds, P.G. C.HG., California Department of Water Resources Senior Engineering Geologist
4. Preparation of this report that presents my opinions concerning the Todd characterization of site geologic conditions including lithology, geologic structure, and water table elevation.

A review of the hydrogeologic characterization of the site by Todd is not within the scope of this review.

BACKGROUND INFORMATION

The history of development of the western United States is punctuated with wars of words and bullets over conflicting claims of surface and subsurface water rights.

F.D-1

Comment Letter F, Exhibit F.D

Sonoma County is no exception.

In response to public pressure and a Grand Jury recommendation, Sonoma County Permit and Resource Management Department (PRMD) has prepared a map showing the relative abundance of groundwater throughout the County. This **Groundwater Availability** map (Reference 1) was published by PRMD in 2003 and designates four zones as follows:
Zone 1. Major groundwater basin.
Zone 2. Major natural recharge area.
Zone 3. Marginal groundwater availability area.
Zone 4. Areas with low or highly variable water yield.

F.D-1 cont.

Areas of Sonoma County in Zones 3 and 4 are considered "Water Scarce" . For proposed projects in Zones 3 and 4, PRMD has instituted a very specific and detailed set of investigative procedures that must be completed to prove that water is available for the proposed project and that use of this water will not adversely affect neighboring water users and the environment. For ease of reference these requirements are in the Appendix of this review report.

CORNELL WINE FACTORY GROUNDWATER INVESTIGATIONS

RGH groundwater investigation.

The first groundwater availability investigation of the Cornell wine factory site was performed by RGH Consultants. The results of this investigation were summarized by RGH in *Groundwater Availability Study, Cornell Winery And Vineyard, Santa Rosa,California* , dated July 15, 2004 (Reference 2). In accordance with PRMD procedure this geologic report was submitted to PRMD where it was reviewed and approved by a non-geologist PRMD employee. This unlicensed practice of geology resulted in an approval of the RGH report (Reference 3), that in my professional opinion simply makes no sense.

The non-geologist who reviewed the RGH report listed and described in detail in his review nine specific deficiencies in the report. Nevertheless, he approved the RGH report stating in his review document "I would honor any request to with hold (sic) this site from the data base, **particularly if there is no remaining budget to amend this report"** (emphasis added). In other words, this PRMD non-geologist apparently approved a geologic report that he found to be substandard in nine respects because it would have been a financial hardship on the property owner, **a wealthy Managing Director of Goldman-Sachs**, to provide an adequate investigation of groundwater availability. The absurdity of this entire situation speaks for itself. A copy of this approval (Reference 3) is in the Appendix of this report.

F.D-2

The critical questions of water availability and adverse impacts of groundwater

overdraft simply cannot be adequately reviewed by unqualified personnel. Subsequent review of this same RGH report by the California Department of Water Resources resulted in written comments that the investigation was done inadequately (Reference 4 and Appendix). F.D-2 cont.

Todd Engineers groundwater investigation.

As a result of the findings of inadequacy in the RGH report, Todd Engineers performed another water availability investigation of the Cornell site and the results were presented by Todd in *Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California,* dated August 2006. The Todd report is the subject of this geologic review.

Like a geologic investigation for any purpose, a geologic investigation of groundwater availability must investigate the site to identify all of the geologic issues that are relevant to the issue in question. In this case the issue in question is water availability. According to the Todd report, no independent geologic investigation of the site was performed. Instead, only regional geologic maps that are totally unsuitable for characterizing individual sites were used by Todd. F.D-3

It is my professional opinion that Todd failed completely to adequately investigate the site. The site investigation was, in my professional opinion, completely inadequate and the conclusions in the Todd report dated August 2006 are not site specific and cannot be relied upon, especially given the potential impacts of water withdraws on neighboring wells and the critical habitat of Mark West Creek. Based on my meeting with Mr. Bonds on December 20, 2011, it is my understanding that Mr. Bonds agrees with me. In fact, in our meeting Mr. Bonds characterized the data obtained from regional geologic maps presented in the Todd report dated August 2006 as no more than "...a good start". Some of the many inadequacies of the Todd report are described below. F.D-4

On page 5, Todd states that the "Geologic Framework" of the site presented in the Todd report was taken from regional geologic maps published in 1973 and 1980. The 1980 source used by Todd is *Geology For Planning in Sonoma County,* California Division of Mines and Geology (CDMG) Special Report 120 (Reference 5). Special Report 120 incorporates the 1973 work by Fox also mentioned by Todd. In other words Todd did no independent site investigation to allow characterization of actual site conditions. F.D-5

The SR 120 geologic and landslide maps were prepared at a scale of 1"= 1 mile. This scale is typical of regional geologic mapping but its limitations must be respected. This concept is best explained by the authors of CDMG Special Report 120 themselves. On page 3 SR 120 states "For these reasons, use of the data for detailed planning at scales larger than these maps will lead to distortions and F.D-6

misrepresentations of fact (emphasis added). The error will become greater with greater disparity of scales, because the larger the scale, the greater the implication of high-level detailed investigation. If the data were to be enlarged and shown on maps with dwelling unit density zones and ownership parcels, inaccuracies would almost surely lead to **erroneous judgments affecting substantial interests"** (emphasis added). In other words, the regional geologic maps relied upon by Todd were never intended for that purpose!

F.D-6 cont.

On page 5, Todd further states that "This investigation did not include any formal pumping tests or water quality analysis on existing water supply wells. Groundwater quality data are not availability for this study". The attention of reader of this review report is again directed to the PRMD requirements for water availability testing on sites with Zone 3 and 4 designations and to the comments of Mr. Bonds concerning the importance of actual well pump test data in his memorandum dated June 6, 2005 (Reference 4). Mr. Bonds' memorandum is also presented in the Appendix of this report. As stated in a preceding paragraph of this review report, because by their own admission the Todd report contains no data obtained from an actual site investigation, the conclusions in the Todd report are meaningless.

Jon Tracy of Sonoma County PRMD (a non-geologist) explains his approval of the Todd report, despite its lack of data, by stating that sites of over 100 acres where wineries of 15,000 cases or less annual production are proposed are not required to have the Zone 4 water availability investigations done that PRMD requires of everyone else. This biased misapplication of PRMD requirements has no basis for three reasons. First, according to page 2 of the Todd report future expansion to 20,000 cases is planned "...in Phase 2". Secondly, my research of the Sonoma County General Plan disclosed no such exemption and my three email exchanges with Mr. Tracy questioning this "exemption" failed completely to identify the basis for his statement. My emails to and from Mr. Tracy are in the Appendix of this report. Finally, in a memorandum dated June 7, 2005 to Jennifer Barrett, Peter Parkinson (PRMD Director), Dean Parsons and Segrid Swedenborg (Reference 6 and Appendix) Tracy states "**This was probably the last groundwater study requested prior to implementing the Kleinfelder checklist** (emphasis added). As such they were not held to the checklist standard, **but my August 17th letter pointed out what is expected in future studies** (emphasis added)."

F.D-7

In total disregard for the above statement by Tracy, the Todd groundwater report that fails to implement the Kleinfelder checklist was approved by PRMD! This failure to implement its own and statewide standards is at the heart of the improper PRMD approvals of the Cornell project.

It seems highly likely that the reason that the PRMD-required Zone 4 water availability investigation is not being done on the Cornell wine factory site is that the likely

outcome would be a finding of inadequate water availability. This suspicion is supported by my personal observations and the observations of many neighbors of water trucks delivering water to the neighboring Pride Winery, as recently as December 2011. There is simply no obvious reason to not do the PRMD-required testing except for fear of the test results. Doing the testing would almost certainly cost less than the proposed water use "mitigation" of buying an adjacent residence on Wappo Road only to demolish it, as proposed by project proponents. F.D-7 cont.

As stated in the preceding paragraphs, the fatal flaw in the Todd report is the lack of site data. Other fallacies in characterizing geologic conditions at the site are also present in the Todd Report. These are like "The deck chairs on the Titanic" in comparison to the lack of geologic data, but they are described briefly below.

Figure 2 is a map showing neighboring well locations including Well 104676 that, coincidental, is on my property. Figure 2 also shows the location of Geologic Cross Section A-A'. There are two important issues here. First, Items 9, 10 and 11 of the PRMD Zone 4 water availability investigation requirements require that owners of neighboring wells be contacted to learn of any problems that may bear on water availability. I, for one, was not contacted. Secondly, Section A-A' is oriented northwest-southeast. This may have been done to avoid plotting the maximum amount of well data on the section. Section A-A' could have just as easily been oriented southwest-northeast to pass through wells 104676, 965395, 56397, 210149 and 913154 maximizing the amount of data available to characterize groundwater elevations. The purpose of geologic cross sections is to illustrate geologic data in the third dimension. Orienting geologic cross sections to exclude data defeats that purpose. F.D-8

On page 7 Todd states "Because relatively few wells have been drilled in the study area and water levels have not been regularly recorded at existing wells, the water table depicted on the cross section is an estimation of the groundwater profile". This statement is untrue in two regards. First, on page 15 Todd lists nine "Relevant" wells; 6 on the Cornell property and three on neighboring property. Nine wells provide valuable data and they certainly should have been plotted on a Geologic Cross Section. Second, how can Todd say no monitoring data from these wells are present? Todd simply did not make the effort to ask the neighboring well owners if monitoring data are available. This is an example of the required Zone 4 data not being presented. F.D-9

On page 30 Todd states "Eighty-eight wells were reviewed for this groundwater availability study, of which about 24 wells (most along Saint Helena Road and adjacent to Mark West Creek) were in the vicinity of Cornell farms and only two wells were located in the North Watershed area". This appears to directly contradict the above quoted statement that "...relatively few wells have been drilled in the study area". F.D-10

Also on page 30 Todd states "Typical well yields in fractured rock aquifers average between 2 and 30 gpm, with most wells yielding less than 5 gpm. The Cornell farms wells, **although not tested** (emphasis added), **may** (emphasis added) be able to continuously and reliably produce between 10 and 15 gpm". This kind of obvious, highly optimistic conjecture simply has no place in a scientific report. It is OK to not have certain facts at the onset of a scientific investigation, but in that case geologists and hydrogeologists should get the facts, not guess at them. F.D-11

SUMMARY

According to the PRMD Groundwater Availability map the site is in Zone 4, characterized by "Areas with low or highly variable water yield". It is my professional opinion that fundamental geologic data required to characterize the site are simply not present in the Todd report. To quantify any site characteristic, including groundwater availability, without site specific data yields conclusions that cannot be relied upon. It is for that reason that PRMD has instituted special requirements for groundwater availability investigations in Zone 4 and those requirements have not been met by Todd. F.D-12

I trust that this review report fulfills your present requirements. If there are any questions about information in this report, or if additional information is required, please do not hesitate to call.

Very truly yours,

Raymond Waldbaum

Raymond Waldbaum
Professional Geologist 3142
Certified Engineering Geologist 923

REFERENCES

1. *Groundwater Availability Map,* by Sonoma County Permit and Resource Management Department, copyright 2003

2. *Groundwater Availability Study, Cornell Winery And Vineyard, Santa Rosa, California* by RGH, dated July 15, 2004.

3. *Review of Groundwater Study for File Number UPE03-0092* by Jonathan Tracy, Sonoma County PRMD R.E.H.S., dated August 17, 2004.

4. *RE: Henry Cornell Winery and Groundwater Resources; PRMD File No. 03-0092* to Ms. Lainey Gerber, Clerk of the Board of Supervisors by Christopher L. Bonds, P.G., C. HG., Senior Engineering Geologist, California Department of Water Resources dated June 6, 2005.

5. *Geology for Planning in Sonoma County,* California Division of Mines and Geology Special Report 120, 1980.

6. *Memorandum to Jennifer Barrett, Peter Parkinson (PRMD Director), Dean Parsons and Segrid Swedenborg* by Jonathan Tracy, dated June 7, 2005

EXHIBIT E

Avocet Research Associates, LLC
wildlife biology

Memorandum

To: Laura Waldbaum, NOWWE

From: Jules Evens and Lisa Hug, Avocet Research Associates

Date: January 27, 2012

Re: Review of "Biological Resources Report for the Cornell Winery Project" Prepared by T.P. Winfield et al. (September 14, 2011).

Background

Avocet Research Associates was asked to comment on documents related to the Cornell Winery Project, particularly to those sections dealing with birds and mammals. Toward that end we reviewed the following documents:

1) "Biological Resources Assessment: Henry Cornell Winery," prepared by Prunuske Chatham (July 2010).
2) "Biological Resources Report for the Cornell Winery Project," prepared by T.P. Winfield *et al*. (September 14, 2011).

Our evaluation of those documents focuses mostly on the Winfield report because it is more recent and more comprehensive than the Prunuske-Chatham report.

Qualifications

Jules Evens, MA, began his career as a field biologist with Point Reyes Bird Observatory Conservation Science (PRBO) in 1974 and founded Avocet Research Associates LLC, an independent consulting group, in 1984. He has acted as Principal Investigator and/or Consulting Biologist on many long-term monitoring studies of avian populations (with a focus on threatened and endangered species) to document habitat affinities and population trends. Mr. Evens has worked co-operatively with various government agencies and is a certified wildlife biologist holding current permits:

U.S. Fish and Wildlife Endangered Species Permit: TE 786728-3
California Department of Fish and Game Collecting Permit # 801092-04
Federal Bird Marking and Salvage Permit: # 09316-AN

Evens is also author of three books in the "California Natural History Series" published by University of California Press, including *California Birdlife* (2005), *The Natural History of the Point Reyes Peninsula* (2008), and *Birds of the Coastal Northern California* (in

press).

ARA biologist Lisa Hug, MA, has been working in the field of environmental consulting for over 15 years on projects concerning avian ecology of landbirds, shorebirds, and seabirds. She has been teaching classes in bird identification, behavior, distribution and life history at College of Marin for ten years. She is currently co-compiler of the Sonoma County Breeding Bird Atlas (in progress).

Evaluation of the "Winfield Report.

Abbreviations used in this evaluation are as follows:

CDFG: California Department of Fish and Game

USFWS: U.S. Fish and Wildlife Service

SCBBA: Sonoma County Breeding Bird Atlas

The following sectional headings refer to those used in the Winfield report.

Section 3.4 Birds and Mammals

Coverage: Site surveys were conducted on May 12, June 2 and August 29, 2011 as well as during the surveys conducted to sample California Red-legged Frogs (CRF). Most of those CRF surveys were conducted at night, so the only April 22 CRF survey, conducted during daylight hours, could detect diurnally active bird species.

Comment: The seasonal timing of coverage, from mid-April through August in a single year, would not detect species that occur on the site in winter or during fall migration. Furthermore, standardized protocols for avian surveys specify morning coverage.[1] The coverage reported in Winfield report was inadequate to accurately detect bird use of the site (see discussion, below). F.E-1

Section 3.4.1. Birds (p. 36-39)

Coverage

Nesting bird surveys were conducted on May 12, June 2, and August 29, 2011.

Comment: The nesting season for many, if not most, locally breeding species begins earlier in the year, so the timing of these surveys probably overlooked earlier nesting species, especially resident bird species and raptors. Furthermore, those surveys that overlapped with at least the tail end of the nesting season (May 12, June 2) where F.E-2

[1] http://data.prbo.org/cadc2/index.php?page=field-research

conducted in the evening hours. Standardized protocols for monitoring landbirds[2] specify that timing of surveys should begin "approximately 15 minutes after local sunrise and should be completed within 3-4 hours, generally by 10AM." These protocols were developed to capture the period of maximum vocal activity of nesting birds and ensure comprehensive coverage (Ralph *et al*. 1993).

The only morning bird survey conducted in the Winfield report was in late-August, well outside the nesting season for most if not all locally nesting species (see "Breeding Season" for each species in "The Sonoma County Breeding Bird Atlas," Burridge1995.)

The report states: "No passerine birds were observed actively nesting within the Project site and a 50-foot buffer area and no larger birds, including birds of prey, were observed actively nesting within the Project site and a 300-foot buffer area. Many birds were observed during these surveys and some did exhibit nesting behavior, primarily in the form of territorial calls, but no bird was observed flying from or back to a nest or transporting nesting material." Given the survey timing and the methods used during the surveys, the foregoing statement is unreliable and the list of birds provided in the report is certainly incomplete.

F.E-2 cont.

Either the common or scientific names of several species listed in the report are incorrect (AOU 1998, Banks *et al*. 2008, Chessler *et al*. 2010, WFO 2012), as follows:

"Western Flycatcher" refers to Pacific-slope Flycatcher (*Empidonax difficilis*)
"Plain Titmouse (*Parus inornatus*)" refers to Oak Titmouse (*Baeolophus inornatus*)
Yellow-rumped Warbler: (*Dendroica coronata*) = (*Setophaga coronata*)
Orange-crowned Warbler (Vermivora celata) = (*Oreothlypis celata*)
Black-throated Gray Warbler (Dendroica nigrescens) = (*Setophaga nigrescens*)
Townsend's Warbler (Dendroica townsendi) = (*Setophaga townsendi*)
Yellow Warbler (Dendroica petechia) = (*Setophaga petechia*)
Rufus-sided Towhee (*Pipilo erythrophthalmus*) = Spotted Towhee (*P. maculates*)
Northern Oriole (*Icterus galbula*) = Bullock's Oriole (*Icterus bullockii*)

F.E-3

The Winfield report states: "it is highly unlikely that birds of prey are actively nesting within the Project site and 300-foot buffer" (p. 39). The "buffer zones" selected (50-feet and 300-feet) for evaluating impacts to nesting birds are proportionally inadequate, especially for raptors and larger passerines. For example, the prescribed buffer zone for

F.E-4

[2] http://www.psw.fs.fed.us/publications/Documents/gtr-144/06-censusing.html.

a project in proximity to the occupied territory or nest of a federally threatened Northern Spotted Owl (*Strix occidentalis caurina*) is **300-meters to 500-meters**, the distance depending on the source of disturbance (USFWS 2006). The effective area covered by the 50-ft to 300-ft buffer in the Winfield report is 0.17 to 6.4 acres (0.07-2.6 ha); the effective area covered by a 300- to 500-meter buffer zone is 69.8 to 193.9 acres (28.3-78.5 ha), therefore the area covered in the Winfield report is only a small fraction (0.25 to 3.3%) of the potential impact area posed by construction activity. (See Northern Spotted Owl discussion, below).

F.E-4 cont.

Section 3.4.2 Mammals (p. 39)

The report identifies Dusky-footed woodrat as utilizing habitat on the site. This rodent is the primary prey base of the Northern Spotted Owl (Gutiérrez *y*. 1995). Other mammals are identified as potentially occurring, but no systematic surveys were conducted to assess presence/absence or habitat associations of those species. As with other mammals, the bats are listed based on known distributions from the literature, however two species that are likely to occur are missing form this list: Townsend's Big-eared Bat (*Cornorhinus townsendii*) and Mexican Free-tailed bat (*Tadarida brasiliensis Mexicana)*. The omission of Townsend's Big-eared Bat is significant, particularly because the species has been listed as vulnerable to extinction (VU) by the World Conservation Union's 2004 IUCN Red List of threatened species (www.redlist.org). Also, Federally in the United States, the western subspecies, C. t. townsendii and C. t. pallescens were listed as former USFWS category 2 candidate for listing (USFWS 1989; USFWS 1994) under the Endangered Species Act (ESA).[3] The omission of Townsend's Big-eared Bat from Section 3.4.2 is corrected by the species' inclusion in Section 3.6.6.2 (Table 4).

F.E-5

Section 3.6.5 Special-status Bird Species (pp. 71-82)

The following species are expected to occur in the habitat types described in the Winfield report, but were not mentioned. This is maybe the result of the timing of the bird surveys (late in the season; not overlapping with typical breeding activity of some species), or lack of observer familiarity with vocalizations (?). The report does not reference several documents critical to determining likelihood of occurrence of bird species in Sonoma County: *Sonoma County Breeding Bird Atlas* (Burridge 1995), *Birds*

F.E-6

[3] http://www.wbwg.org/speciesinfo/species_accounts/vespertilonidae/coto.pdf

of Sonoma County (Bolander and Parmeter 2001), *California Bird Species of Special Concern* (Shuford and Gardali 2008), and *Birds of Napa County* (Heinzel 2006).

The Sonoma County Breeding Bird Atlas (hereafter SCBBA) partitioned the County into 195 "blocks," or grids, each 5 kms^2 (9.75 square miles) blocks was assigned two three digit numbers. The project site, 245 Wappo Road, is in Sonoma County Breeding Bird Atlas Block 535-260. (In the following discussion, block 535-260 is referred to as "the Wappo Road block.") Surrounding blocks were 535-255 (south), 535-260 (west), 535-265 (north) also in Napa County, 530-265 (northwest) and 530-255 (southwest). Each of these blocks encompasses topography and habitat types similar to those of the Wappo Road block, with the exception of the block to the southwest (530-255), which is lower in elevation and less forested. Any records found within the four similar blocks should have been considered in the species accounts. Records in blocks 535-255, 535-260, and 535-265 are within approximately 7.0 kms (2.7 miles) of the Wappo Road block.

F.E-6 cont.

Following are species-by-species accounts included or omitted from the Winfield report.

Section 3.6.5.1. Cooper's Hawk

The bird surveys did not find Cooper's Hawk, nor did they discover any in the CNDDB. However, the Sonoma County Breeding Bird Atlas (SCBBA) has Cooper's Hawk as confirmed breeding in block 535-255 and as a probable breeder in the Wappo Road block.[4] Cooper's Hawk very likely nesting nearby as it is also confirmed in Napa County blocks 535-265 and 540-265, each with similar habitat characteristics to the Wappo Road block.

F.E-7

3.6.5.2 Sharp-shinned hawk

The Prunuske-Chatham report correctly categorizes the potential for occurrence within the project site as "high." The Winfield report states occurrence at the site as "possible." SCBBA lists Sharp-shinned Hawk as a possible breeder within the Wappo Road, possible in block 530-265 and possible in 535-255. Also, as possible breeder in Napa County block 540-265. The site provides appropriate non-breeding ("wintering") habitat, as identified in the CDFG Special Animals list (2011).

F.E-8

[4] "Probable breeder" is defined as a pair present in appropriate habitat during the breeding season; a bird defending territory on two separate dates; courtship behavior or copulation; visiting a probable nest site; nest building or excavation of holes.

3.6.5.3 Tricolored Blackbird

We concur with the evaluation in the report F.E-9

3.6.5.4 Black Swift

We concur with the evaluation in the report F.E-10

3.6.5.5 Golden Eagle

There are no nearby nesting confirmations in the SCBBA, though confirm breeding sites were spread widely throughout the county (Burridge 1996). Golden Eagles have a large foraging area, so they could more than likely use the area at least for foraging, most likely in fall when young birds are dispersing. F.E-11

3.6.5.7 Great Blue Heron

We concur with the evaluation in the report. F.E-12

3.6.5.8 Purple Martin

Considered a USFWS Bird Species of Special Concern (breeding), priority 2 (Shuford and Gardali 2008). No records of Purple Martins were found in the course of the bird surveys, however, the Winfield report mentions that the species could occur and they are known to occur in the general area (Bolander and Parmeter 2001, Heinzel 2006). Martins are wide ranging aerial insectivores in spring and summer should be searched for in the morning hours during late spring through mid-summer. F.E-13

3.6.5.9 White-tailed Kite

Prunuske-Chatham categorizes this raptor has having “moderate” potential for presence on the site. We concur. This species is nomadic and responds to population peaks of California voles (*Microtus californicus*), its primary prey base. Given its fairly wide distribution as a permanent resident in Sonoma County (Bolander and Parmeter 2001), it probably occurs as a transient on the site. It is a confirmed nester in block 530-265. F.E-14

3.6.5.10. American Peregrine Falcon

We concur with the evaluation in the Winfield report. F.E-15

3.6.5.11. Prairie Falcon

We concur with the evaluation in the report. F.E-16

3.6.5.12 Long-eared Owl

Lack of detection during a single season is not indicative of nesting status. Given this species semi-nomadic life history and the habitat characteristics of the site, this species can be expected to occur, if only occasionally. F.E-17

3.6.5.13 Loggerhead Shrike

Considered a USFWS Bird Species of Special Concern (breeding), priority 2 (Shuford and Gardali 2008). We concur with the evaluation in the report. F.E-18

3.6.5.14 Yellow-breasted Chat

We concur with the evaluation in the report. F.E-19

3.6.5.15 Barn Owl

Probable nester in block 530-255. Barn Owls are confirmed nesters in Napa blocks 535-265 and 540-260 and possible in 540-265. These blocks have similar habitat to the area being surveyed. If the building planned to be demolished is abandoned, it should be checked for nesting owls (and roosting bats). If there are any Palm trees on the premises, they might support nesting Barn Owls. F.E-20

3.6.5.16 Northern Spotted Owl (NSO)

The report mentions a high density of NSOs within a five-mile radius of the project area (Winfield report, Figure 18, p. 81) with the closest one 1900 feet (579 meters) from the "Project impact area." As discussed above, the size of the impact area (or "buffer zone") is dependent on several variables: ambient noise levels, sound levels generated by the project, and site topography (USFWS 2006). To determine the size of an effective buffer, one must first characterize the ambient (pre-project) noise levels, identify the decibel levels of equipment to be used during construction (Table 2 in the USFWS guidelines) and compare those values with Tables 1 & 2 in the Noise Guidance report provided by USFWS to quantify the acreage "subject to harassment from auditory disturbance" (USFWS 2006). F.E-21

Once the natural background noise and the "action-generated sound" [i.e. decibel levels of the project] have been quantified, these values should be compared with the

Table on page 6 of Appendix A in the USFWS report to determine the harassment distance [= "buffer"]. For example if the natural background level is "zero to very low" (45-65 dBA) and the action-generated sound is "very high" (96-108 dBA), the harassment distance is 500 meters.

According to the USFWS guidelines: "It is appropriate to consider all reasonable means to minimize take [i.e disturbance to or harassment of owls], including but not limited to seasonal restrictions and substitution of equipment . . . When considering measures to reduce the effects of harassment, the analyst should bear in mind not only the spatial extent of disturbance, but also the timing and duration of disturbance." (USFWS 2006, p.10).

F.E-21 cont.

Determination of the location and status of NSOs in the year(s) of construction is also an important criteria, as specified in the Northern Spotted Owl Survey Protocol (USFWS 2011). The protocols specify the following:

1) Survey Area: "to apply when determining the survey area around proposed projects that may impact northern spotted owls" for the California coast range (Douglas-fir/mixed conifer zone) is 1.3 miles (USFWS 2011, Table 1).

2) Habitat to Survey includes any habitat within the survey area where protocol surveys may elicit a response from a resident owl or pair of owls.

3) Survey Period; March 1-June 1 (in the California Coast Ranges) with two observations at least one week apart if the first observation occurs before May 1.

4) General Survey Design: establish calling stations to achieve complete coverage of all habitats within the survey area . . . with stations typically 0.25 to 0.5 miles apart.

F.E-22

The USFWS guidelines provide refinements to the broad requirements enumerated above, that should be applied on a site-specific basis. The two surveys conducted by Darren Wiemeyer reported in the project report were conducted May 18 and 24, 2011 and followed the USFWS 1992 protocols that differ from the 2011 protocols. Future assessments of the site should follow the more recent 2011 protocols.

As the Winfield report states: "The Project area provides suitable habitat for NSOs." Although NSOs tend to be a philopatric (site tenacious) species, the location of territories and the status of birds can change from year-to-year. If this project is permitted, it is essential that (1) the locations and status of each NSO or NSO pair within a 1.3 mile radius of the project site be evaluated during each year of construction activity, (2) that the disturbance potential be evaluated with reference to the USFWS

F.E-23

guidelines (op. cit.), and (3) if those activities fall within the recommended harassment distance that measures be taken to reduce the levels or disturbance in consultation with the Service or a wildlife biologist permitted to evaluate Threatened and Endangered species in California. F.E-23 cont.

The Winfield report does not mention the possibility of Barred Owl in the vicinity. Barred Owls are displacing NSOs in several Bay Area counties, including Sonoma, (Jennings *et al*. 2011), and their presence/absence should be evaluated prior to any physical alteration of occupied NSO habitat. Additional concerns regarding the NSO assessment in the report can be found in Baye 2010. F.E-24

Special status species included on CDFG's "Special Animals" list (2011) and/or California Bird Species of Special Concern (Shuford and Gardali 2008) that may occur, but are omitted from the Winfield report (15 species). F.E-25

Great Egret (*Ardea alba*) and Snowy Egret (*Egretta thula)*
Nesting colonies of these two species are included on the CDFG "Special Animals" list and are not known to nest on the Wappo Road site (Kelly 2006). Habitat requirements of these species are similar to those of Great Blue Heron, which is included in the Winfield report (Table 4). These species should be added to the list of "special-status species of birds and mammals, their habitat affinity and potential occurrence at the Project site." F.E-26

Ferruginous Hawk (*Buteo regalis*) and Merlin (*Falco columbarius*)
Both species are included on the CDFG "Special Animals" list for their wintering habitat. No bird surveys were done in winter to determine use by non-breeding raptors that may use the area for feeding or roosting. Both species are "uncommon winter residents" in Sonoma Co. (Bolander and Parmeter 2001); although habitat is not ideal, these species could potentially occur. F.E-27

Osprey (*Pandion haliaetus*)
Possible nesting in 530-255 (SCBBA) with confirmed nesting in 20 percent of the 195 blocks covered in the SCBBA. This species is increasing as a nesting species in Central California coast and should be considered a potential nester at the site. Osprey nests are conspicuous; if one becomes established in the area, measures should be taken to F.E-28

protect it from disturbance. A 5 acre (263 foot radius) diturbance habitat buffer is prescribed by CDFG.[5] F.E-28 cont.

Northern Harrier (*Circus cyaneus*).
Included on CDFG's Special animal List (nesting). No known nests nearby (SCBBA). No appropriate nesting habitat available on site, though this raptor likely occurs as a transient. F.E-29

Vaux's Swift (*Chaetura vauxi*)
Considered a CDFG Bird Species of Special Concern (breeding), priority 2 (Shuford and Gardali 2008). Nesting habitat is protected for this species of special concern (CDFG 2011). This species nests in hollowed out trees and snags in forested areas and in chimneys in Sonoma County (Burridge 1995). The SCBBA shows nesting in blocks proximate to the subject property. Any removal of dead snags or existing buildings should be inspected for nesting swifts (as well as bats) prior to removal or disturbance. F.E-30

Nuttall's Woodpecker (*Picoides nuttallii*).
Included on the CDFG Special Animals list for nesting and a USFWS Bird of Conservation Concern. Nests widely through Sonoma County; to be expected on the subject property (Habitats 2&3, *Quercus agrifolia & wisizenii*-Winfield 2011*)* based on habitat affinities (Burridge 1995, Bolander and Parmeter 2001). It has been confirmed on the surrounding blocks in the SCBBA. F.E-31

Allen's Hummingbird (*Salasphorous sasin*)
Nesting habitat included on the Special Animals list (CDFG 2011), this species is "extensive" in the interior southern half of Sonoma Co. (Burridge 1995) and likely nests on the subject property. Protection of dense shrubbery (e.g. blackberry brambles) will enhance habitat viability. F.E-32

Olive-sided Flycatcher (*Contopus cooperi*)
Considered a CDFG Bird Species of Special Concern (breeding), priority 2 (Shuford and Gardali 2008) and USFWS Bird of Conservation Concern. Breeding habitat is primarily F.E-33

[5] https://r1.dfg.ca.gov/Portal/TimberHarvestProgram/Wildlife/WildlifeSpecies/Birds/Osprey/tabid/620/Default.aspx

late-successional conifer forest. This species is present as a breeder in the vicinity of Wappo Road (SCBBA) and should be included in the biological assessments. F.E-33 cont.

Oak Titmouse (*Baeolophus inornatus*)
Included on the CDFG Special Animals list for nesting. Confirmed breeder in the Wappo road block and two neighboring blocks (SCBBA), an associate of Habitats 2&3 (*Quercus agrifolia & wisizenii)* in the Winfield report. F.E-34

Hermit Warbler (*Setophaga occidentalis*)
Included on the CDFG Special Animals list for nesting. Habitat associations, as defined in the Winfield report, are "Habitats 1 & 4: *Sequoia sempervirens/ Pseudotsuga menziessii."* Hermit warbler is an uncommon nesting species in Sonoma County, but often overlooked it's song is very similar to the more common Black-throated Gray Warbler. To determine presence/absence, It should be searched for by an searched for in the early morning during late April through early June. F.E-35

Yellow Warbler (*Setophaga petechia*)
Included on the CDFG Special Animals list (nesting) as a Species of Special Concern and a USFWS Bird of Conservation Concern. This riparian habitat associate, should be searched in the early morning during breeding season (early April through June) . F.E-36

Grasshopper Sparrow (*Ammodramus savannarum*)
Included on the CDFG Special Animals list (nesting) as a Bird Species of Special Concern, priority 2 (Shuford and Gardali 2008). The vegetation map in the Winfield report identifies areas of grassland habitat mostly closely associated with the A*denostoma* Alliance. This may be suitable habitat for Grasshopper Sparrow and this species should be actively searched for. Early mornings during late April through July are the best times to search for this species and a person with good high-end hearing skill should look for this bird, as it is best located by its high. insect-like song. F.E-37

Bell's Sage Sparrow (*Amphispiza belli belli*)
Included on CDFG's Special Animals list and "watch List (CDFG 2011). Confirmed breeding records in three blocks south and north of the Wappo Road block in Sonoma County and two blocks north in Napa Co (Burridge 1996). This species expected F.E-38

(*Adenostoma* alliance) and to be detected should be surveyed in the early mornings during spring breeding season. F.E-38 cont.

Additional species omitted from the Winfield report

The following additional species, though not included in the CDFG Special Animals list, are included on the American Bird Conservancy "Watch List"[6] and are expected to nest in the habitat types on the project site (Burridge 1996, Bolander and Parmeter 2001). California Thrasher (*Toxostoma redivivum*) and Wrentit (*Chamaea fasciata*) were detected on the avian surveys and are listed in the Winfield report (p. 38), however Mountain Quail (*Oreortyx pictus*) is not. F.E-39

3.6.6 Special Status Mammal Species

We concur with the conclusions reached in the Winfield report regarding special-status mammals, however the lack of distributional information on those special status chiropterans listed in the report limits its value for biological assessment. We recommend bat surveys be conducted and all existing structures and potential roost sites be surveyed to determine their status as roost sites or hiburnicula by a qualified biologist. F.E-40

Section 4.3 Impacts on Birds and Mammal Species

Impact 7 (p. 97) of the Winfield report states: "Although no roosting bats or nesting birds were observed where habitats will be removed or temporarily affected during construction, roosting bats and/or nesting birds may occur in the Project site. Therefore, mitigation measures should be implemented prior to construction to avoid impacts to nesting birds, bat maternity roosts and special-status birds and mammals." F.E-41

Comment

We concur with the above statement, but would add that comprehensive surveys, especially of birds and bats, should be conducted as part of the initial biological assessment rather than as "mitigation measures." The information on faunal distribution in this document is too incomplete to allow an informed assessment of the potential impacts of construction, development and ongoing human use of the site.

Impact 8 (p 97) of the report states "The loss of wildlife habitat from development of the F.E-42

[6] http://www.abcbirds.org/abcprograms/science/watchlist/index.html

Project would be minimal."

Comment

We infer from the statement that the authors mean direct impacts from the project, i.e. the immediate footprint of the development. However, this view does not account for the potential disturbance ("harassment") posed by the project as exemplified by the discussion of the NSO buffer, above. The footprint of the project is larger than the 50-foot and 300-foot "buffer zone suggests. This judgment about loss of wildlife habitat is premature given the gaps in the biological assessment enumerated herein. Furthermore, the exclusion zone specified in Mitigation 8 maybe sufficient for some species, but not for others (e.g. NSO). F.E-42 cont.

Impact 9 (p. 98) Disturbance to NSOs.

The distances given from NSO territories are based on 2011 surveys; owl territories are not fixed in space. Locations of those territories may shift in future nesting seasons. Are these distances from the center of these territories or the edge? Also, the "500-foot no disturbance buffer required around active NSO nests" is a misinterpretation of the USFWS requirements (USFWS 2006). As discussed above, that distance is dependent on several variables and the decibel level of construction activity. The effective harassment zone may be on the order of 300 to 500 meters (984-1640 feet). F.E-43

The evaluation of noise disturbance that may result from the project was based on dated guidelines (USFWS 1996, as cited in the Winfield report). The Impact 9 assessment should be revisited to address more recent and more relevant guidelines (i.e. USFWS 2006).

Impact 10 (p. 102) Impacts to bats.

The narrative omits Townsend's Big-eared Bat (see discussion, above). Mitigation 10 is appropriate. F.E-44

Errata

Table 4. "Special status Species of Birds and Mammals" includes California Tiger Salamander (*Ambystoma californiense*), an amphibian. F.E-45

Conclusions

- The coverage and timing of the bird surveys was inadequate to detect all nesting bird species therefore the results of those surveys are incomplete. F.E-46
- Mammal surveys are lacking or rely on existing distributional information (CNDDB), which is scant, especially in reference to bats. F.E-47
- The methodology used in the surveys was inadequate to provide a thorough or comprehensive profile of avian species nesting on the property. F.E-48
- There was no attempt to determine use of the habitat on the property to wintering species or non-breeding species. F.E-49
- Erroneous nomenclature used in the report casts doubt on the accuracy of other information provided. F.E-50
- The arbitrary buffer used to estimate the potential for disturbance posed by construction or commercial activity on the site covered only small proportion of the area required by USFWS protocols. This buffer zone would be highly inadequate to protect listed species from disturbance, especially the most sensitive federally protected species known to occur in the area in relatively high densities, the Northern Spotted Owl. F.E-51
- Assumptions used in the impact analysis are sometimes speculative or may be dated if and when construction begins; mitigation measures in some cases rely on dated guidelines. F.E-52

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EXHIBIT F

Comments on the Impact of the Proposed Cornell Winery Project (Application UPE07-0008) to Mark West Creek Pacific Salmon Species and Critical Habitat

Performed for
New Old Ways Wholistically Emerging (NOWWE)

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ABSTRACT

These comments on the Biological Resources Report (TWA 2011) submitted in support of the proposed Cornell Winery Project (Project) (Sonoma PRMD Application UPE07-0008) are being done at the request of New-Old Ways Wholistically Emerging (NOWWE) and focus on the project's impacts to Pacific salmon species, particularly steelhead trout (Oncorhynchus mykiss) and coho salmon (Oncorhynchus kisutch). Both these species are federally listed under the Endangered Species Act (ESA), and coho salmon are also listed under the California Endangered Species Act (CESA). The National Marine Fisheries Service (NMFS 2010) categorizes Mark West Creek as a priority basin for protection and recovery of coho salmon in its *Central California Coast Coho Recovery Plan*. Sonoma County classifies the headwater area where the Project will take place as "Water Scarce" and Mark West Creek has been classified as "Fully Appropriated" by the California State Water Resources Control Board (SWRCB 1998).

Based upon my knowledge of the project area and my review of the scientific literature, it is my opinion that there are major flaws both in the TWA (2011) report's characterization of the fishery and the Projects' potential effects on it. The Project's potential effects include increasing flood peaks, decreasing base flow and increasing sedimentation in an area which is already experiencing effects from existing over-development above coho salmon and steelhead Critical Habitat for spawning and rearing. The TWA (2011) report's discussion of fisheries, water quality, hydrology, and cumulative effects in many instances lack scientific credibility. Ecological problems and watershed and water quality conditions are obscured in the document, which treats the Project in isolation and ignores the cumulative effects of other similar projects in the upper watershed. It also minimizes the effects of the proposed winery and existing vineyards on the North Fork and mainstem Mark West Creek immediately downstream.

The TWA (2011) report implies that coho salmon are extinct in the Russian River, when in fact wild coho salmon juveniles were reported in Mark West Creek in 2011 (Sotoyome RCD 2012). In addition coho salmon juveniles from the captive broodstock program at Warm Springs Hatchery have been planted in Mark West Creek in 2010 and 2011, including immediately downstream of the Project site. TWA (2011) also states wrongly that steelhead do not occur in the North Fork itself. Adult steelhead have been videotaped in the North Fork in the past and, although video documentation has been filed with the Sonoma County Permit and Resource Management Department (PRMD), TWA (2011) makes no reference to it. Also, juvenile steelhead were documented in the lower North Fork by CDFG (Acomb 2011b) in late August 2011.

Water use is the key issue with regard to the Cornell Winery development and TWA (2011) obfuscates problems associated therewith. Although TWA (2011) reports that the northern well of the planned Project draws from the northern aquifer that feeds the North Fork of Mark West Creek, the report does not consider the effects of water withdrawals from the well on habitat in the North Fork Mark West Creek. Furthermore, TWA (2011) ignores the fact that fault plains in the area may extend across drainages; therefore, the north well could also serve to reduce flows of cold water to the mainstem of Mark West Creek (Kamman 2007). Based on temperature gradients in pools on the North Fork and immediately downstream in the mainstem, connection to the hyporheic zone is apparent. Consequently, it is likely the North Fork aquifer is feeding the mainstem Mark West Creek through sub-surface flows, even when there is no surface water connection. In sum, TWA's (2011) claim that the Project has no impacts on coho salmon and steelhead Critical Habitat in Mark West Creek is not correct.

F.F-1

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Introduction

A creek needs water or it cannot support an aquatic community, so as hardy species like steelhead trout blink out or become limited to dwelling in isolated pools, the rest of the creatures that depend on cool, clean flowing water will expire with them. I have supplied comments on a number of similar developments in Sonoma County and can document problems with cumulative effects resulting in loss of surface flow or flow diminishment to the point of compromising beneficial uses in:

- Green Valley Creek, which was the last refugia for coho salmon in the Russian River (Higgins 2011),
- Rainbow Creek, tributary of Maacama Creek and the Russian River that had coho as recently as 2001 (Higgins 2008c),
- Little Creek, tributary to Buckeye Creek and the lower South Fork Gualala River (Higgins 2004),
- Patchett Creek, tributary to the Wheatfield Fork Gualala River (Higgins 2009), and
- South Fork Gualala River (Higgins 2003).

F.F-2

Similar problems are also manifest in the nearby Napa River (Higgins 2006a, 2007a, 2007b, 2008b, 2010). West-side tributaries like Carneros Creek, Dry Creek and Rainbow Creek are in a more advanced condition of de-watering, with only isolated pools supporting steelhead (Stillwater and Dietrich 2002). Stillwater and Dietrich (2002) found that these fish lost weight during summer due to a lack of food transport as flows in some sections of streambed became dry. The mainstem Napa River has gone from a gaining stream to a losing stream due to over-extraction of groundwater (Jackson 2009) and no longer supports older age juvenile steelhead during low flow periods and downstream migrant trapping results shows the steelhead population is dangerously dwindling (Higgins 2010). Mark West Creek is already experiencing many of these effects that will continue to worsen, if cumulative impacts are not addressed and stream flows protected and restored.

Qualifications

I have been a consulting fisheries biologist with an office in Arcata, California since 1989 and my specialty is salmon and steelhead restoration. I authored fisheries elements for several large northern California fisheries and watershed restoration plans (Kier Associates 1991, Pacific Watershed Associates 1994, Mendocino Resource Conservation District 1992) and co-authored the northwestern California status review of Pacific salmon species on behalf of the Humboldt Chapter of the American Fisheries Society (Higgins et al. 1992). Since 1994 I have been working on a regional fisheries, water quality and watershed information database system, known as the Klamath Resource Information System or KRIS. This custom program was originally devised to track restoration success in the Klamath and Trinity River basins, but has been applied to another dozen watersheds in northwestern California. The Sonoma County Water Agency (SCWA) funded regional KRIS projects (IFR 2003), including one for the Russian River (KRIS Russian), in order to provide a seamless regional coverage for coho salmon recovery planning. The North Coast Regional Water Quality Control Board (NCRWQCB) served in an oversight capacity on the latter project for quality assurance and quality control. I draw extensively on information in KRIS Russian River (IFR 2003) and all data are available with metadata on-line at www.krisweb.com.

F.F-3

I have addressed the problems of over-appropriation and illegal diversion of water in northwestern California, including Sonoma County, on behalf of the Redwood Chapter of the Sierra Club (Higgins 2008a) in commenting on the California State Water Resources Control Board (SWRCB) Water Rights Division (WRD) *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams* (SWRCB WRD 2008). I also have experience in reviewing other proposed land uses in the Russian

River similar to the Cornell Winery Project (Higgins 2003, 2004a, 2004b, 2008c, 2009b, 2011). Since 2006 I have examined the cumulative impacts of vineyard development and timber harvest conversion on steelhead populations in the nearby Napa River (Higgins 2006a, 2007a, 2007b, 2008b, 2010). The latter cases studies are particularly helpful in understanding implications of the Cornell Winery Project development and in assessing the sufficiency of supporting environmental documents (TWA 2011).

Documents Reviewed in Preparation of Comments

I have read or reviewed numerous documents in addition to the *Biological Resources Report for the Cornell Winery Project* (TWA 2011). The Sonoma County Supervisors (2010) Resolution justifying the Project and specifying mitigations was reviewed. My review included the SWRCB (1998) declaration of Mark West Creek as fully appropriated with regard to allowance of additional water diversions. The letter from Senior Engineering Geologist Christopher L. Bonds (DWR 2005) regarding groundwater supply was also instructive. Geologic and hydrologic background information by Cotton, Shires and Associates (CSA 2010), Kamman (2008) and licensed Engineering Geologist Raymond Waldbaum (2011a, 2011b) are useful for understanding potential problems posed by the Project. California Department of Fish and Game (Acomb 2011a) memos document presence of steelhead juveniles in the North Fork Mark West Creek immediately downstream of the Project and in the mainstem Mark West Creek below the North Fork during low flow conditions in 2011 (Acomb 2011b). CDFG (1971, 2004a) reports and plans also verify past coho salmon presence in Mark West Creek. The NMFS (2010) *Recovery Plan for the ESU of Central California Coast Coho Salmon* and the CDFG (2004a) *Recovery Strategy for California Coho Salmon* were both reviewed for information pertaining to recovery prospects and expectations regarding the Mark West Creek watershed. Volker (2010) framed the problems posed by the Project in arguing for a full environmental review and most of the points he raised related to sedimentation, alteration of flow and impacts to biological resources are not addressed by TWA (2011). The SWRCB WRD (2007) *North Coast Instream Flow* study and related Stetson Engineering (2007) reports also provide relevant background information on the magnitude of the problem of illegal water use that is causing a press disturbance, as described by Reeves et al. (1995), and pushing the coho population into an extinction vortex (NMFS 2008). .

F.F-3 cont.

Project Location

The Cornell Winery Project is in the Mark West Creek watershed in the Russian River Basin (Figure 1). The Project is located in the eastern part of the basin on a tributary of upper Mark West Creek, which is referred to herein as the North Fork of Mark West Creek (Figure 2).

Coho Salmon and Steelhead Populations and Habitat in Mark West Creek

Coho Salmon: Ted Winfield and Associates (2011) *Biological Resources Report for the Cornell Winery Project* is cavalier about coho salmon, treating them as if they are extinct and likely to remain so :

> "Coho salmon, *which were essentially extirpated in the Russian River watershed after 2001*, have been returning to a few tributaries in recent years as a result of a restocking program (Russian River Coho Broodstock Program) that began releasing juveniles to selected tributaries in 2004…..Juvenile coho spend at least one summer in fresh water, then nearly all outmigrate to sea as smolts in the spring (April-June) of their second year, returning to spawn as three-year old adults after approximately 18 months at sea."(emphasis added)

F.F-4

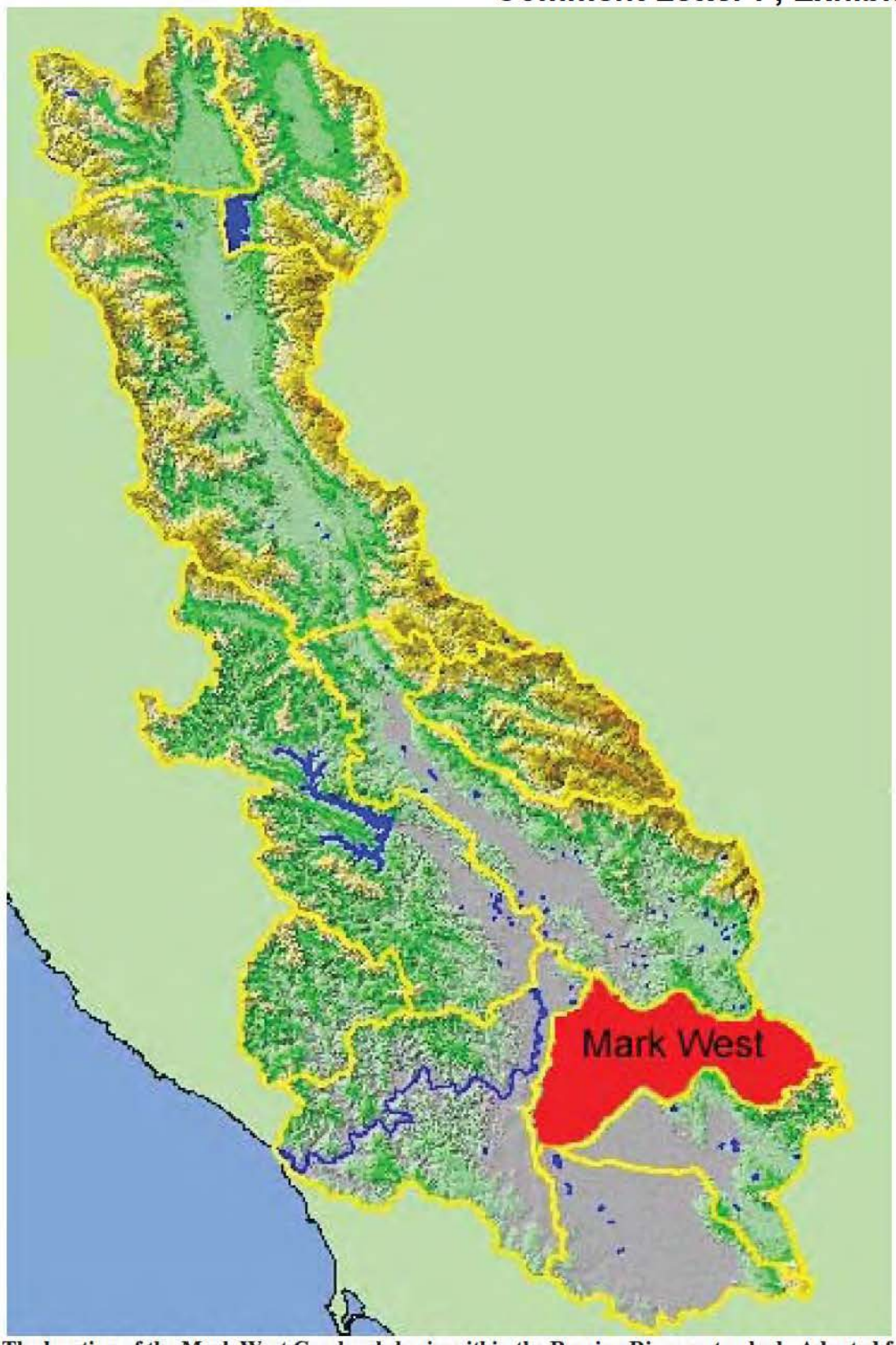

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Figure 1. The location of the Mark West Creek sub-basin within the Russian River watershed. Adapted from KRIS Russian River (IFR 2003).

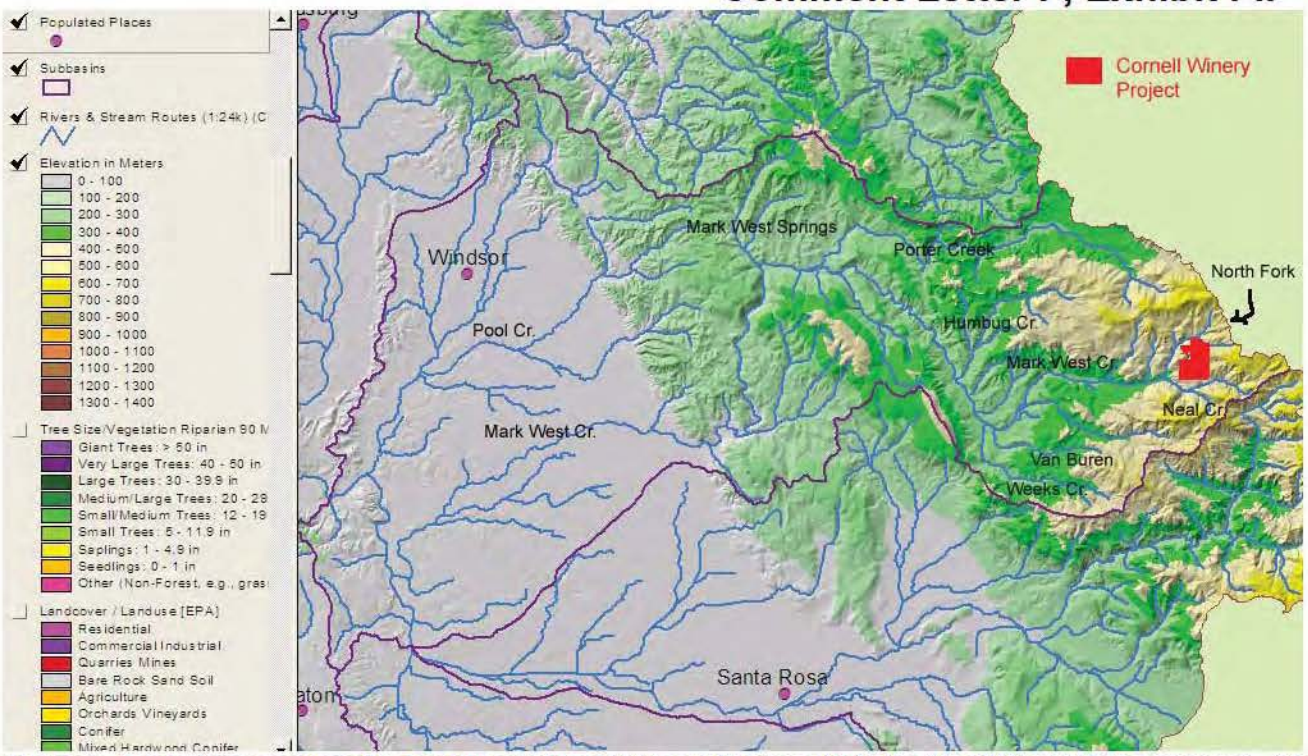


Figure 2. Approximate geographic location of Cornell Winery Project within the Mark West Creek watershed. Map adapted from KRIS Russian River (IFR 2003).

TWA (2011) does not address the cause of extirpation of coho salmon in the Russian River, but flow depletion and lack of rearing habitat is a major driving mechanism (NMFS 2008, Higgins 2008, 2008b, 2009, 2011). The Cornell Winery Project will further deplete flows in Mark West Creek that is known to have recently supported native coho (Figure 3).

F.F-4 cont.

CDFG presence and absence surveys from 2000-2002 found coho salmon in 2001 in Mark West Creek and juveniles from Mark West Springs Creek were used in the captive broodstock program (CDFG 2004a). CDFG (1971) found coho salmon juveniles to be relatively abundant in 1971 and intermingled with juvenile steelhead (60/100 ft). Coho were also caught in downstream migrant traps in 1994 and 1995 (IFR 2003).

Despite the fact that coho salmon are recognized as being at high risk of extinction in the Russian River basin (CDFG 2002, NMFS 2002, 2008), the NMFS (2010) *Central California Coast Coho Recovery Plan* cites Mark West Creek as a priority basin for protection and recovery with re-introduction targeted for 2009-2019. TWA (2011) acknowledges that captive broodstock coho salmon juveniles have been planted in Mark West Creek since 2010 and were found in Porter Creek. The report fails, however, to mention they were planted just below the Project site in 2011 (Figure 4) or that Mark West Springs Creek coho were part of the broodstock for the fish being planted. In addition, the Sotoyome Resource Conservation District website reports coho salmon juveniles were sighted in Mark West Creek in 2011:

> "While conducting a snorkel survey, the UC Cooperative Extension (UCCE) found 27 wild, juvenile coho salmon in Mark West Creek. This finding is very encouraging because coho have not been documented in the Mark West Watershed since 2001. Now, more than ever, this watershed is a focus for conservation and habitat improvement."

Figure 5 shows the intrinsic potential (IP) for coho salmon before disturbance based on valley width and channel gradient (NMFS 2010). There are extensive historic high IP areas for coho salmon in the

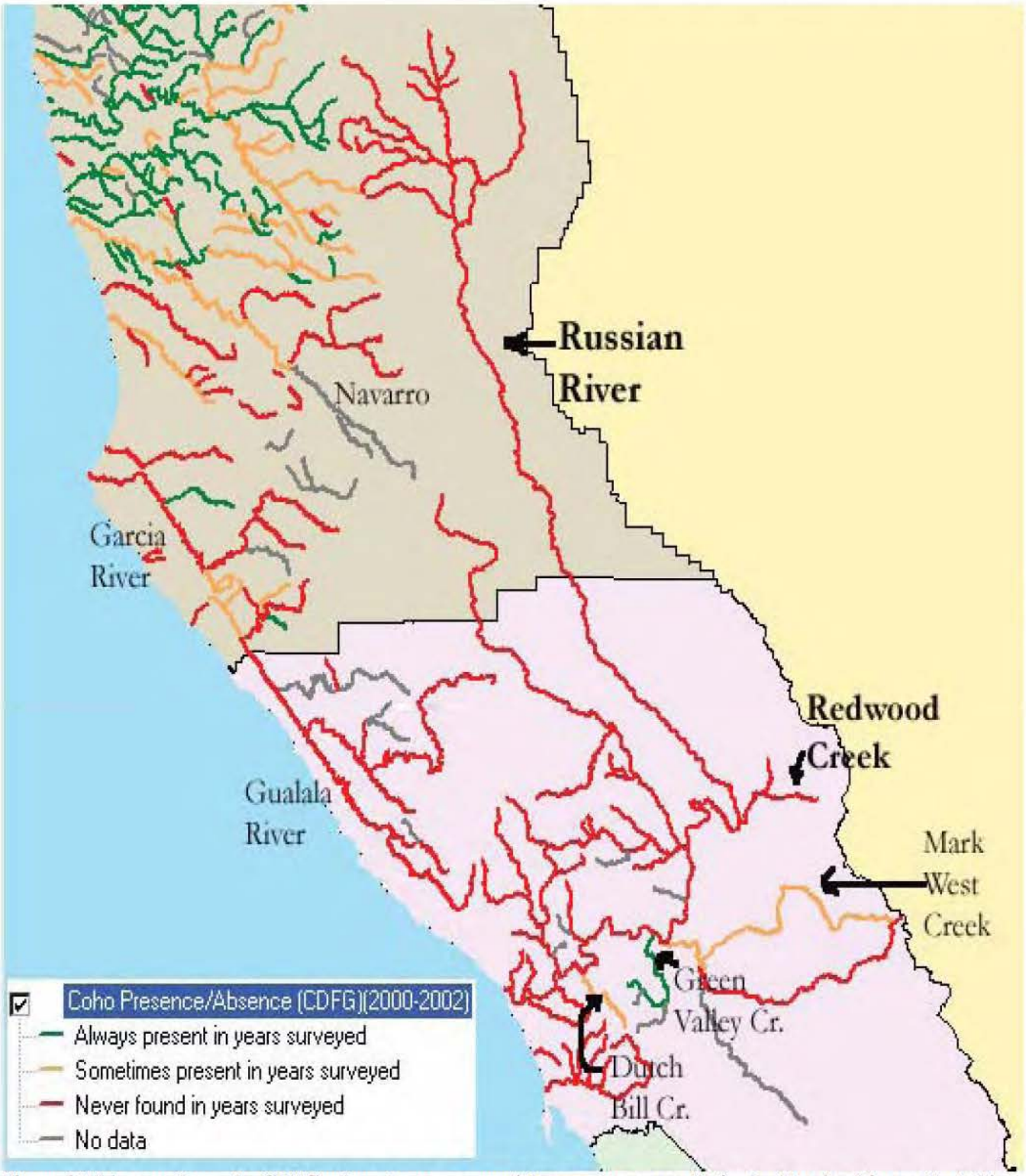


Figure 3. This map shows the CDFG coho salmon presence/absence survey results for the Russian River collected in the years 2000-2002. Red = no coho found in all three years, orange = absent in at least one year and green = present all years. Only Green Valley Creek had coho all three years in the entire Russian River basin, but Mark West did have native coho in 2001. Map from KRIS Russian River (IFR 2003).

F.F-4
cont.

F.F-4 cont.

Figure 4. Coho salmon juveniles photographed in Mark West Creek below the North Fork in December 2011 (See map below). The fish are likely those planted as part of the captive broodstock program at Don Clausen Hatchery. Photo by Laura Waldbaum of NOWWE.

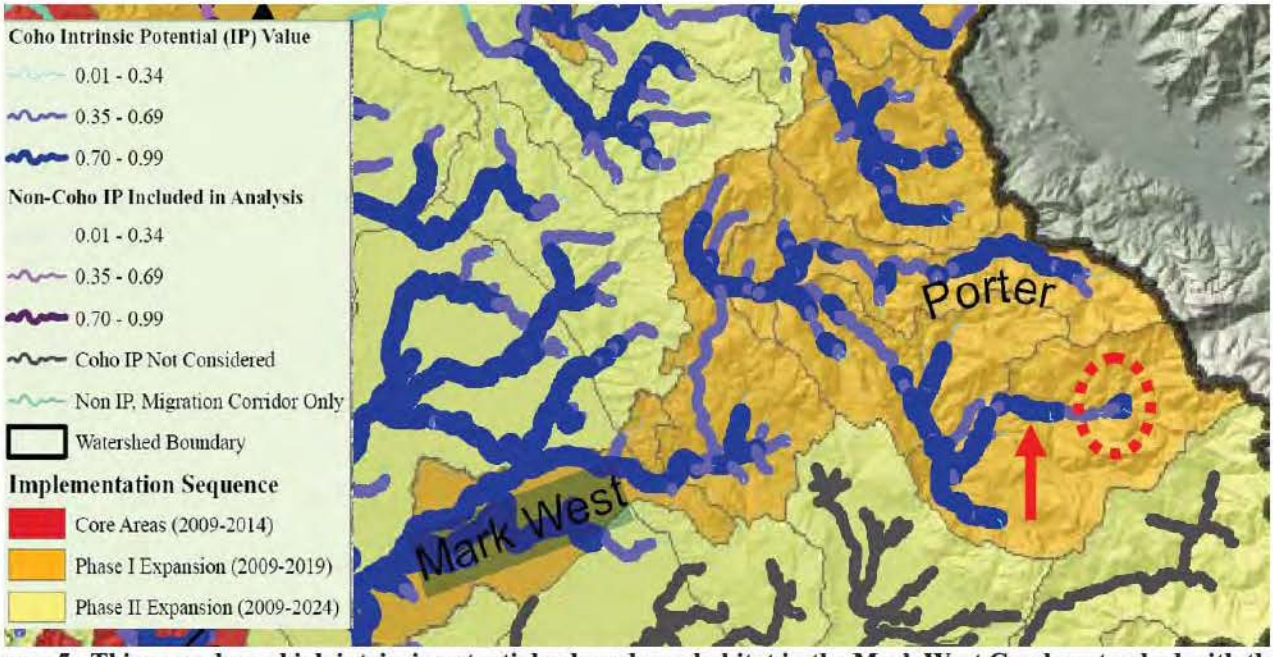


Figure 5. This map shows high intrinsic potential coho salmon habitat in the Mark West Creek watershed with the area at the convergence of the North Fork and the upper mainstem highlighted (red dashed oval). Red arrow indicates location of juvenile coho shown in Figure 4. This map is adapted from the Coho Recovery Plan (NMFS 2010), which shows Mark West Creek as a high priority target for coho salmon re-introduction.

western portions of low gradient stream reaches of Mark West Creek and tributaries Windsor and Pool creeks. However, these areas of historic optimal habitat have been developed for agriculture for 100 years, urbanized and channelized, making them largely unsuitable for coho salmon now and in the foreseeable future. By comparison, the reaches with high IP in the upper watershed have a much better chance of being restored because of less channel disruption and less watershed development. The highlighted oval in Figure 5 points out that the convergence of the North Fork and Main stem Mark West Creek is the upper-most high IP coho salmon habitat in the watershed. This is also one of the few areas of appropriate water temperature to support coho salmon as well (see Water Temperature). F.F-4 cont.

Steelhead Trout: TWA (2011) acknowledges the threatened status of steelhead under ESA and that Mark West Creek is Critical Habitat for the species. However, TWA (2011) denies that steelhead occur in the North Fork below the Project site and cites a September 4, 2011 survey (Table on Page 33) that found no steelhead juveniles present from the pool below St. Helena Road upstream for 1,000 feet. This contrast with a CDFG survey of just a few days earlier (8/26/11) (Acomb 2011b) that found yearling and young of the year steelhead in the very same pool below St Helena Road where the survey reported by TWA (2011) started. Some of the fish sighted on 8/26/11 were captured and relocated because of concerns over the North Fork potentially dewatering (Acomb 2011a). Not all fish were captured because nets could not get them from under ledges in the pool (Laura Waldbaum, personal communication). Therefore, some steelhead trout juveniles were likely still in the pool in question and should have been seen on the subsequent 9/4/11 survey. Alternatively, if they were not there on September 4, pump operation upstream may have dropped flows so low that these fish perished, which would be a "take" of this threatened species under ESA. NOWWE (website) also took video of adult steelhead in the North Fork Mark West Creek in winter 2005. This video evidence is part of the file (at Sonoma County PRMD) for the Cornell Winery project.

Merritt Smith Consulting (MSC 2002) collected fisheries data in Mark West Creek from 1993 to 2001 that show a marked decrease in standing crops of steelhead juveniles from early summer to fall (Figure 6). This is likely indicative of reduced carrying capacity related to flow depletion and very similar to the patterns exhibited in nearby Maacama Creek (Higgins 2009) and Green Valley Creek (2011), both of which also historically harbored coho salmon. It is of interest that 1995 survival was very high, consistent with that being a high flow year, and such high survival is likely the historic norm. Data suggest that summer rearing habitat is becoming increasingly limiting for steelhead. Juvenile steelhead that successfully recruit into the adult population typically spend two years in freshwater (Barnhart 1986) and habitat with sufficient depth and suitable water temperature for larger, older age steelhead juveniles is particularly scarce (see Temperature). F.F-5

MSC (2002) data also show that there was little growth of Mark West Creek juvenile steelhead between summer and fall from 1993-2001 (Figure 7). Steelhead that are stressed due to warm water conditions or crowded due to diminished habitat related to flow depletion would exhibit such slow growth (Sullivan et al. 2000). Dietrich and Stillwater (2002) found that flows were so reduced in west-side Napa River tributaries that juvenile steelhead became isolated in pools fed by sub-surface flows. While temperatures remained suitable, there was no food delivery and fish marked and recaptured over the summer actually lost weight. This means that, although growth was small or modest depending on flow year in Mark West Creek (MSC 2002), a negative growth can be expected if further flow depletion is allowed.

Mark West Creek was extensively surveyed in 2000 by the Sonoma County Water Agency (SCWA) and the catch using electrofishing of representative habitats gives a good picture of the fish community structure (Figure 8). Steelhead remain a substantial component of the community but are fewer in number than other warm water species, such as the California roach. This shift is likely caused by warming that happens in conjunction with depleted flows (see Water Quality) and the historic

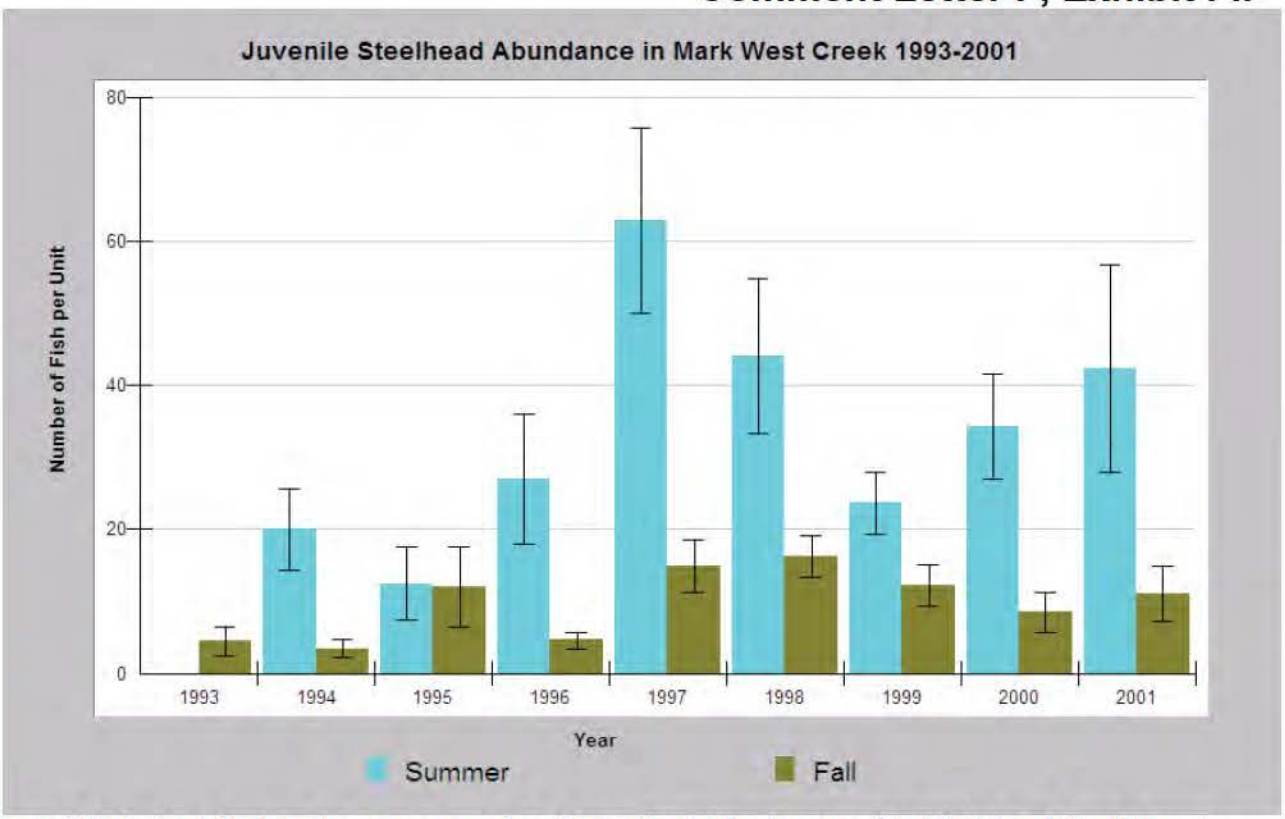


Figure 6. This chart displays the average number of juvenile steelhead captured in Mark West Creek in early summer and fall during in the years 1993-2001. Whiskers show one standard error and represent variation among units in each season. Notice substantial reduction of standing crops of juvenile steelhead, except in 1995. Data from Merritt Smith Consulting (2002) for the City of Santa Rosa. KRIS Russian River.

F.F-5 cont.

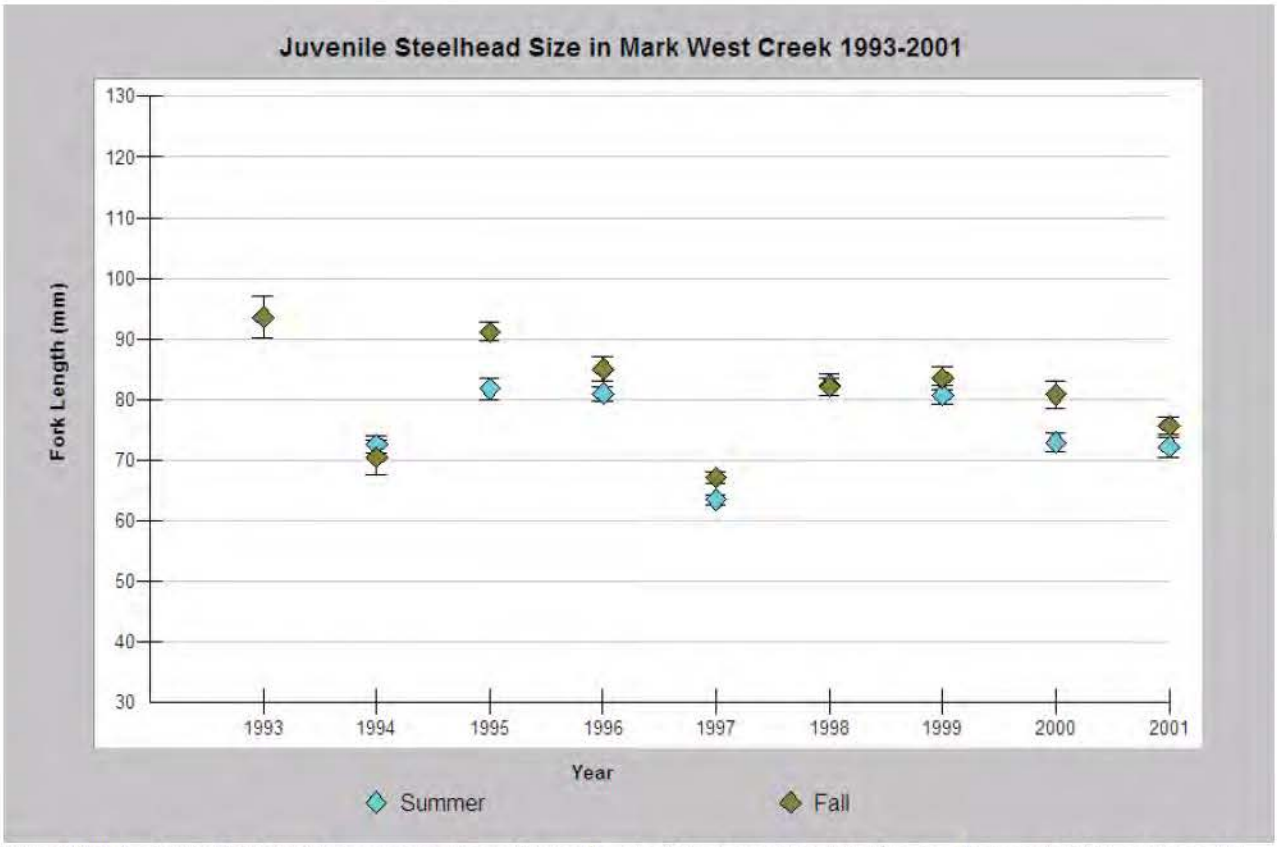


Figure 7. This chart displays the average size of juvenile steelhead captured in five pools sampled by seine net in Mark West Creek in spring and fall during the period 1993-2001. Note that there is minimal growth except in 1995 and 2000. Data from MSC 2002 and chart from KRIS Russian River (IFR 2003).

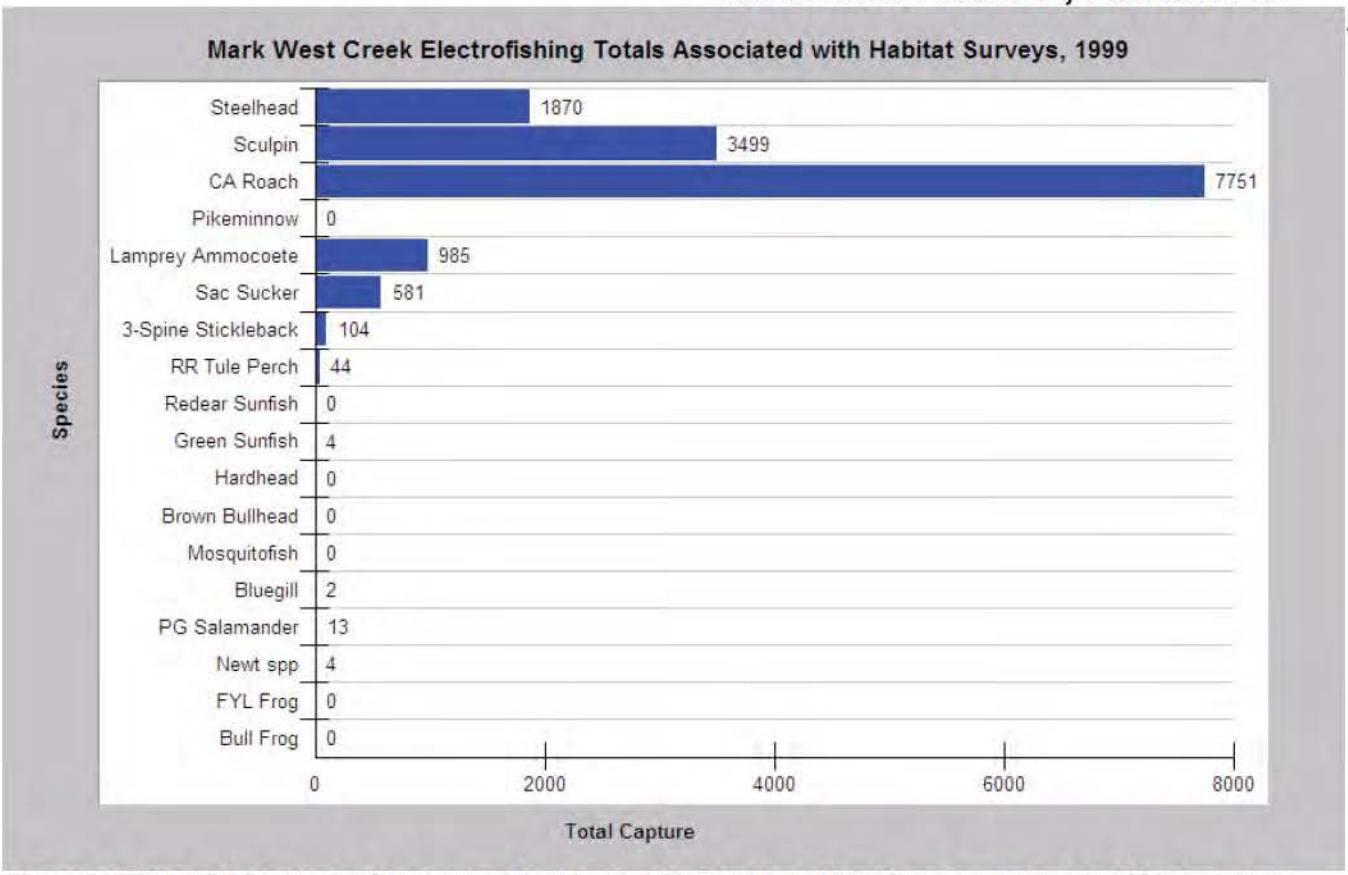


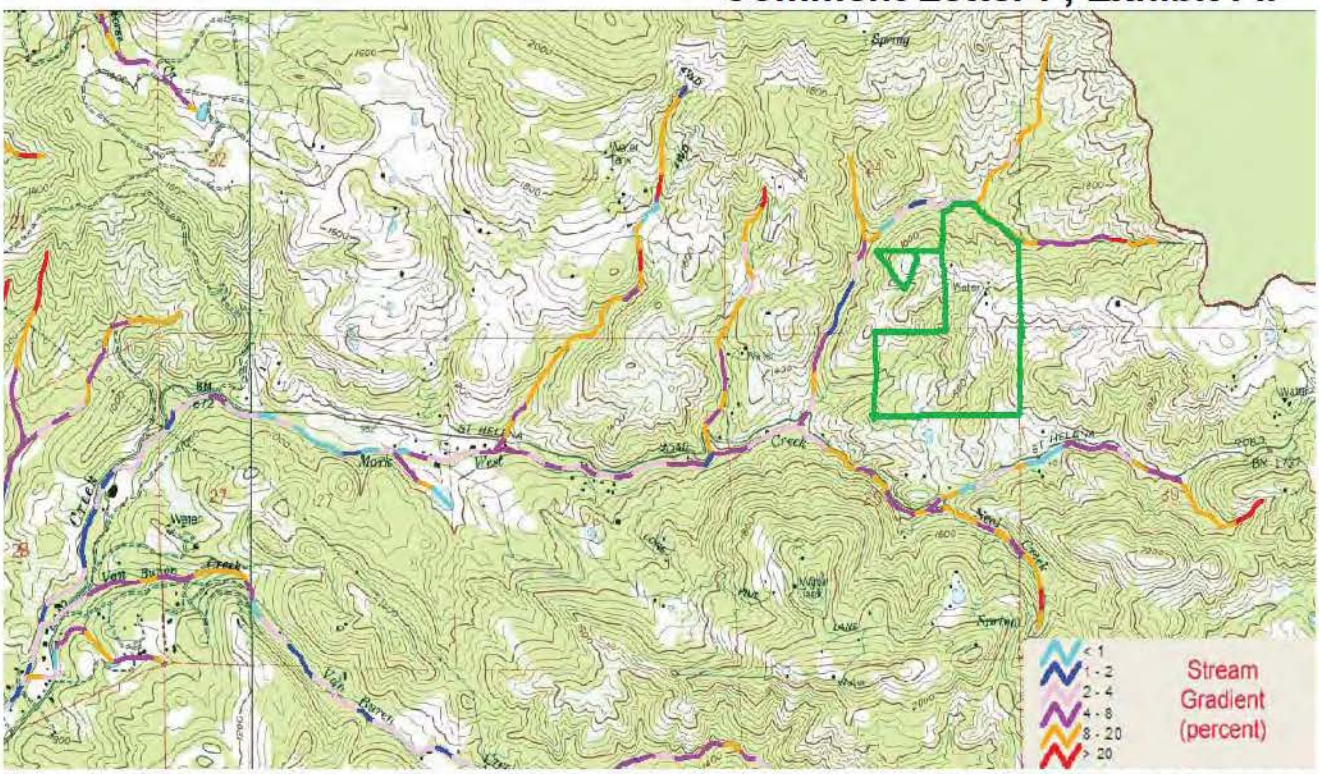
Figure 8. Electrofishing results from several locations within the Mark West Creek watershed in 1999 show that steelhead were present but out numbered substantially by the California roach. This indicates warmer than optimal temperatures for salmonids. Data from SCWA from KRIS Russian River (IFR 2003).

community would have also included coho salmon. TWA (2011) notes a similar community structure in upper Mark West below Humbug Creek with "steelhead, lampreys, prickly sculpin, California roach, and bluegill" captured in annual surveys from 1993-2004. The non-native blue gill is undoubtedly an escapee from a nearby irrigation pond, which is indicative of problems these impoundments cause (see Invasive Species and Native Fauna).

Contrary to the statement in TWA (2011) that there is "no suitable habitat for steelhead spawning or rearing at the Project site", a gradient map of the upper Mark West Creek watershed shows that there are benches within the optimal range of 1-2% for steelhead spawning and rearing in the North Fork (Figure 9).

Historically, headwater streams such as the North Fork would be extensively used for at least spawning in average and wet years and likely had extensive juvenile habitat in wet years and very wet years. Even in years when flow between pools was intermittent there was likely viable pool habitat that provided steelhead juvenile rearing year-around (see Groundwater). Pacific lamprey can access areas of even higher gradient than steelhead, and lamprey spawning also likely occurs in the North Fork (see Other Species Impacted by Project).

F.F-5 cont.



F.F-5 cont.

Figure 9. This map of stream gradient of upper Mark West Creek shows reaches of 1-2% gradient within and just downstream of the North Fork, which historically and presently provide habitat for spawning and rearing steelhead. Map adapted from KRIS Russian River (IFR 2003).

Potential Impacts of Cornell Winery Project on Coho and Steelhead Habitat

While the *Biological Resources Report for the Cornell Winery Project* (TWA 2011) is quite lengthy, there are major flaws in its scientific assumptions. In addition, the discussion of fisheries, water quality, hydrology and cumulative effects lack scientific credibility. Ecological problems and watershed and water quality conditions are obscured in the document, which treats the Project in isolation and ignores major cumulative effects the winery in combination with the existing vineyard poses to the North Fork Mark West Creek and main Mark West Creek downstream. TWA (2011) claims that Best Management Practices (BMPs),and on-site mitigations can prevent cumulative effects, when numerous regional studies point out that they cannot (Dunne et al. 2001). The effects of the Project are discussed by turn below with regard to 1) changes in hydrology, infiltration and groundwater supply, 2) increased sediment contributions, and 3) increased water temperature.

F.F-6

<u>Changes in Hydrology and Biological Consequences</u>: TWA (2011) contradicts itself on the connection of Project wells to the North Fork Mark West Creek and its effects on flows (emphasis in TWA 2011):

> "According to Todd Engineers (2006), the well at 420 Wappo Road that will be used by the Project draws water from the north aquifer which feeds the North Fork, not the main stem of Mark West Creek, and the North Fork is an '*intermittent (seasonal) stream and since it is located in the headwaters of the tributary and have a small upstream watershed it is expected that the streamflow is minimal and intermittent.*' With respect to pumping from this well, Todd Engineers (2006) concluded that over the long term '*the pumping proposed for the Cornell Farms wells will have no significant effect on the surface or ground water yield of the North Watershed.*' It follows that there will be no significant effect on Mark West Creek or the fish inhabiting it."

F.F-7

In fact, the North Fork aquifer would have been fed historically by infiltration from the forested watershed with water percolating into hillslope subsurface pathways and the alluvium of the North Fork itself, similar to mechanisms described by Winter et al. (1998). The fact that the streamflow is becoming "minimal and intermittent" is an increasingly apt description, but it is not the natural condition of the North Fork Mark West Creek. A North Coast Regional Water Quality Control Board (Blatt et al. 2001) pre- timber harvest report recommended treating the North Fork as a Class I stream, which is generally reserved for perennial streams. Groundwater that feeds into headwater streams is extremely important not just because of volume, but also because they tend to be very cold (Lewis et al. 2000).

The applicant's vineyard that preceded the current winery application under consideration here caused large areas of deforestation. TWA (2011) is in denial with regard to the effects this previous land use have had on water supply in the North Fork. Winters et al. (1998) describe the effects of deforestation on water supply (emphasis added):

> "Deforestation tends to decrease evapotranspiration, increase storm runoff and soil erosion, and decrease infiltration to ground water and base flow of streams. *From the viewpoint of water-resource quality and management, the increase in storm runoff and soil erosion and the decrease in base flow of streams are generally viewed as undesirable*."

The deforestation in this case was also associated with additional sediment supply (Waldbaum 2011a) that in turn had substantial negative impacts on Mark West related to habitat quality (Li and Parkinson 2008) and likely temperature (see Temperature). In fact the intact forest at the headwaters of Mark West Creek and the North Fork forms a water bank that helped create the aquatic ecosystem that once sustained abundant Pacific salmon. Volcanic terrain that partially under lays the Project area is likely a factor in locally high groundwater storage and yield (Kamman 2008). As that water is withdrawn, the cold water ecosystem is being profoundly altered not just at the site but in the entire length of the stream. This is problematic because the affected area is one of the last functional patches of cold water habitat not just in Mark West Creek but in the Russian River basin (see Temperature). F.F-7 cont.

Winter et al. (1998) make the following observation about surface water extraction and impoundment, such as that planned in the Cornell Winery Project and already extant from previous developments (emphasis added):

> "Building dams to store surface water or diverting water from a stream changes the hydraulic connection and the hydraulic gradient between that body of surface water and the adjacent ground water, which in turn results in gains or losses of ground water. In some landscapes, *development of ground water at even a great distance from surface water can reduce the amount of ground-water inflow to surface water* or cause surface water to recharge ground water."

> "Ground-water systems that discharge to streams can underlie extensive areas of the land surface. As a result, environmental conditions at the interface between ground water and surface water reflect changes in the broader landscape. *For example, the types and numbers of organisms in a given reach of streambed result, in part, from interactions between water in the hyporheic zone and ground water from distant sources*."

The steep headwater areas of the North Fork and upper mainstem Mark West Creek all have subsurface aquifers that tilt towards the stream because of the uplifted terrain and the strata of the surrounding rocks. Colluvium has filled the depressions that form the stream course and they have been sorted and tumbled for millennia until they formed rounded gravel and small cobble ideal for spawning steelhead. In addition the water coming off the slopes and from hillside springs would also

be stored in the stream bed itself. Figure 10 from Winter et al. (1998) shows how surface water and groundwater interact and shows the location of the interface between the two in the stream bed known as the hyporheic zone. This diagram is not meant to represent the Project area specifically, but rather illustrates diagrammatically the many interactions between landscape alteration activities proposed and groundwater extraction and hydrology down slope and downstream.

Upland activities such as deforestation, additional road construction, creation of ponds and paving or construction of buildings all change the infiltration rates and groundwater supply. Wells which tap into groundwater anywhere from the ridge down to the creek take away water that would otherwise create pressure in the aquifer that causes the slow feed that maintains baseflows of the North Fork Mark West Creek. The cumulative actions are changing the North Fork to a losing stream, which has profound ecological implications including the loss of substantial Critical Habitat for coho salmon and steelhead trout.

Mark West Creek at its headwaters, has a very high gradient (Figure 9) because of the steepness of the landscape. Much of the stream has a gradient greater than 12%, which is a *supply reach* in terms of sediment transport (Lunetta et al. 1997). The upper North Fork also has considerable reaches in the 4-12% gradient range that Lunetta et al. (1997) refer to as a *transport reaches*, where alluvium would not tend to build up. However, as pointed out above, there are also substantial lengths of the North Fork that are 1-4%, which are *response reaches* where sediment will tend to accumulate. Response reaches are usually optimal for salmonids because of spawning gravel supply and the deep alluvium there also contains a cold water storage system in the stream bed or hyporheic zone (Figure 11).

F.F-7 cont.

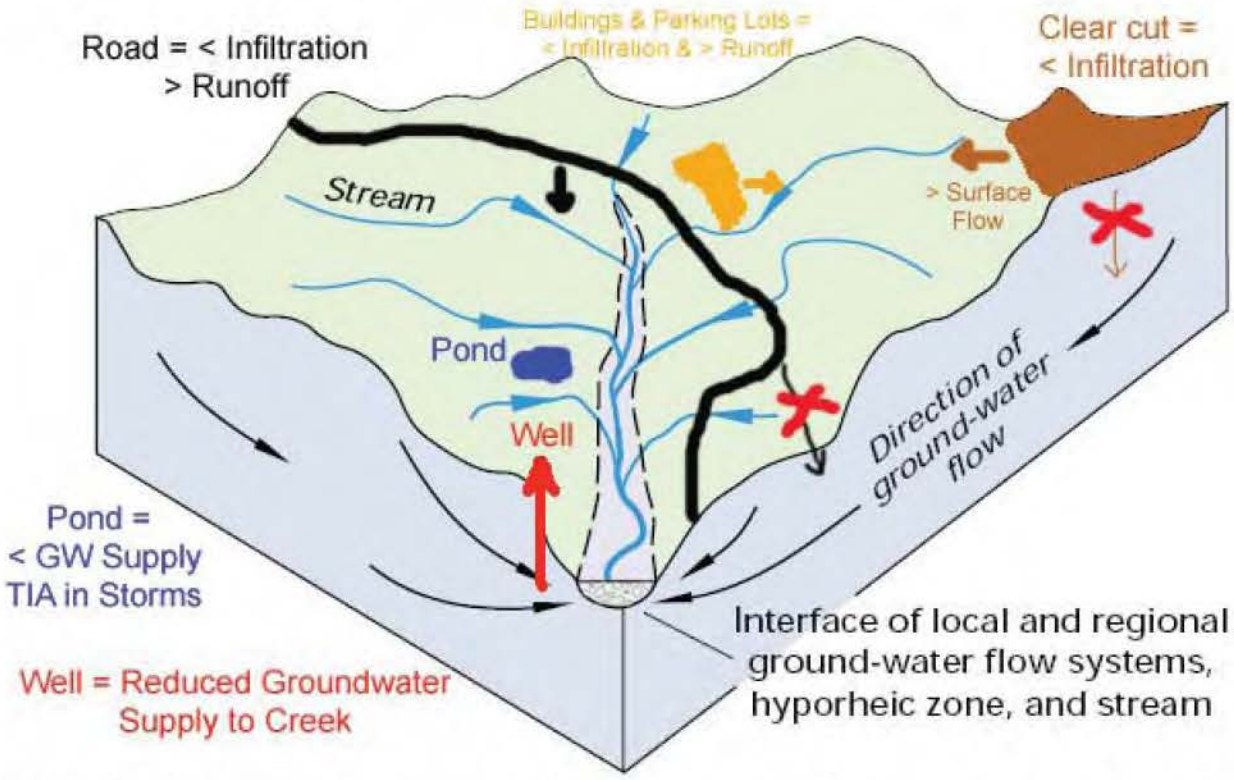


Figure 10. This is a diagrammatic representation of landscape hydrology showing the interaction of surface and groundwater and the relative location of the hyporheic zone beneath the stream bed. Annotations are added showing proposed and existing types of land uses at or near the Cornell Winery Project and their effect on hydrology in captions adjacent to the diagram. The location of Project-related activities in the diagram are not meant to show relative location on the ground at the site of the development. From Winters et al. (1998), where it appears as Figure 15

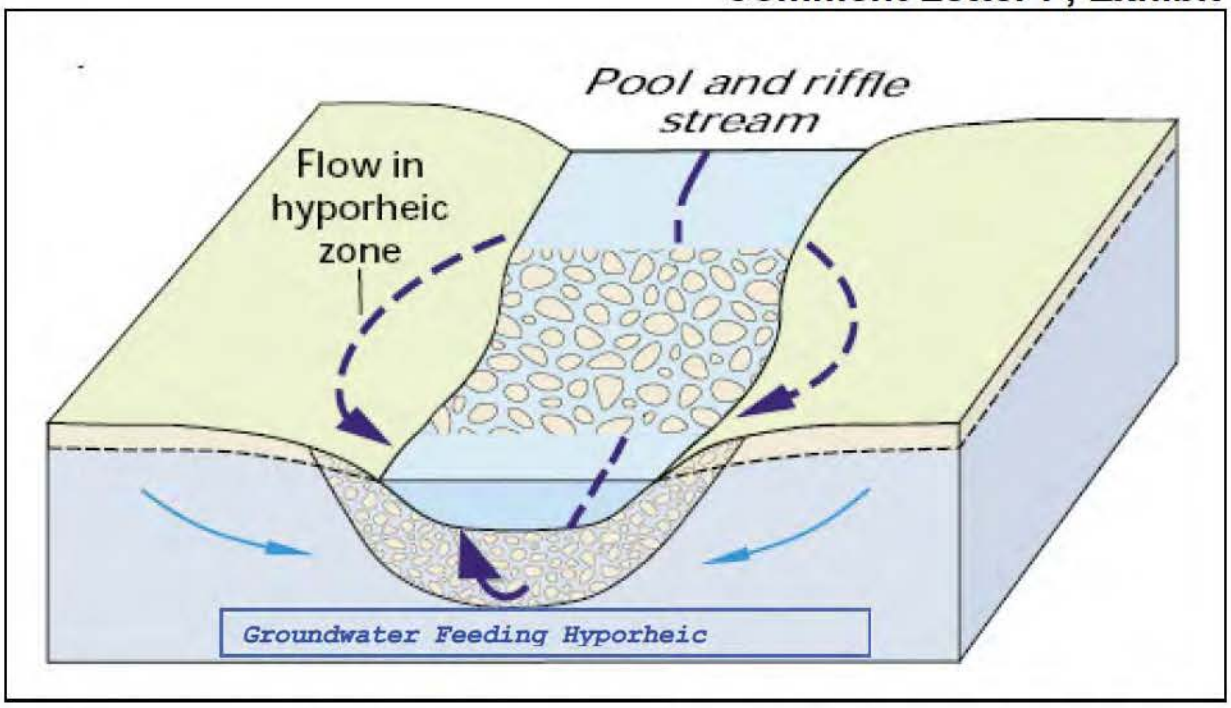


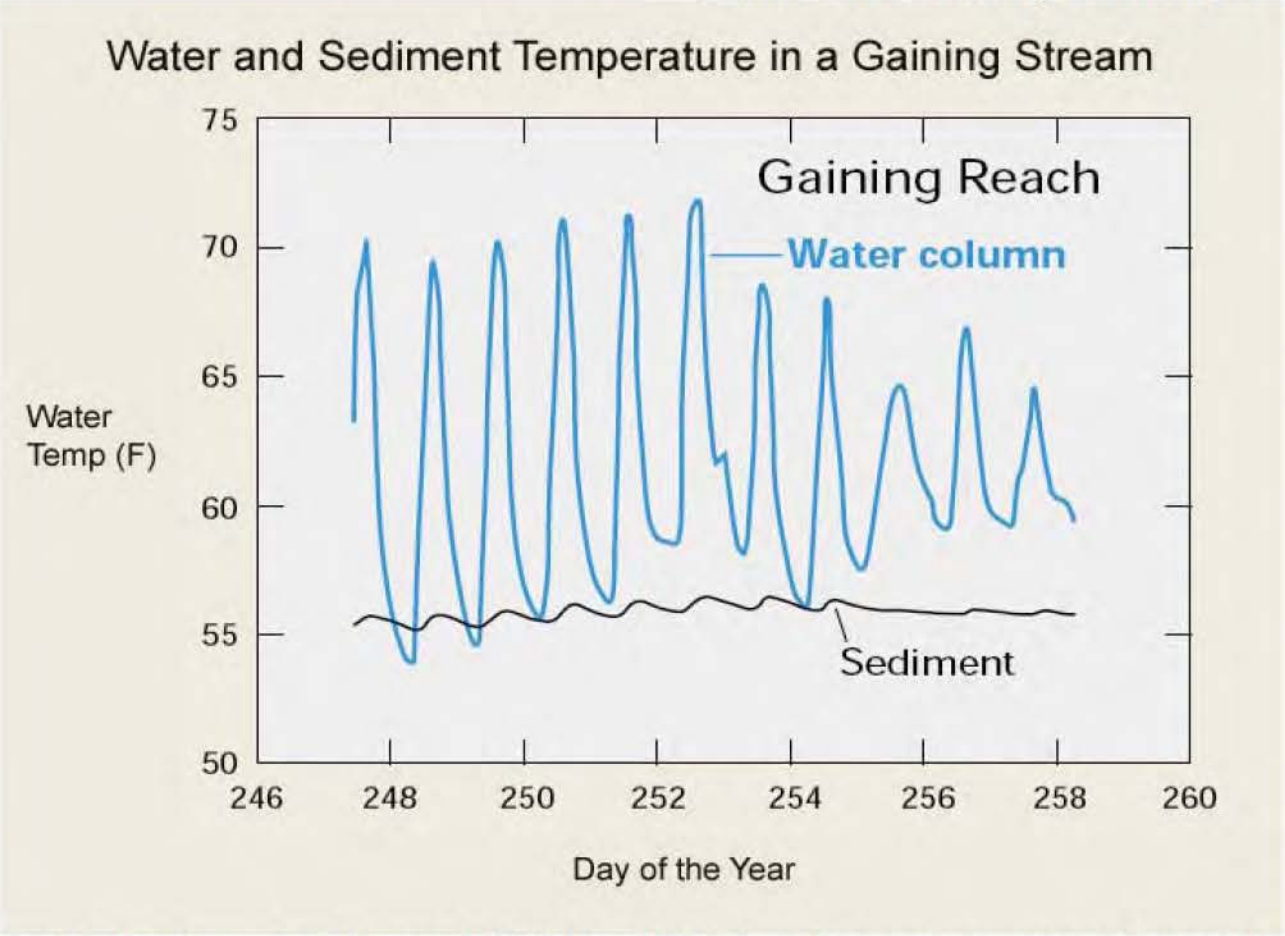
Figure 11. The upper North Fork Mark West Creek has a steep pool-riffle stream profile similar to the one depicted in the diagram, which causes downwelling and recharge of the hyporheic zone (pink cobble/gravel matrix) that then supplies cold water to the creek. Annotation also shows how groundwater (phreatic zone) feeds the hyporheic zone and its pressure drops with well withdrawals. Adapted from Winter et al. (1998) where it appears as Figure 14A.

As the amount of water discharged into the stream increases, hyporheic water supply increases due to downwelling (Winters et al. 1998). Decreases in winter peak flow caused by the Project will; therefore, decrease pressure that drives hyporheic storage. Reduced groundwater from the aquifer outside the hyporheic zone (phreatic zone) will similarly decrease pressure due to well operation in all seasons and, consequently, reduce surface flow contributions through upwelling from the hyporheic zone that supports juvenile steelhead rearing. Nielsen et al. (1994) found that pools scoured around stream obstructions below gravel bars often had very cold water because of hyporheic waters feeding them. Pools were sometimes isolated because of loss of flow in stream segments connecting them. Such pools in the North Fork that have historically supported juvenile steelhead would continue to do so, if feeds to the hyporheic zone were not restricted as described above. F.F-7 cont.

Observations by Acomb (2011a) that the streambed of Mark West Creek is cooler than the water column just below the convergence of the North Fork suggests that it is a gaining stream and that groundwater and/or hyporheic water from the North Fork is helping sustain juvenile steelhead there.

> "In some pools the layer just above the gravel on the bottom felt cooler than the water near the surface of the stream. Pool surface water felt more similar to surface water entering the pools."

Of four pools measured, two had a difference of 2 ^{O} Fahrenheit (F) from the surface of the water and the stream bed. Winters et al. (1998) point out that this is indicative of a gaining stream (Figure 12). The convergence of the North Fork and the upper mainstem Mark West Creek is the site of alluvium deposition that creates hyporheic storage that cools stream temperatures through the stream bed and by contributing water at groundwater temperatures that range regionally from 50-58 ^{O} F (Lewis et al. 2000). The North Fork aquifer is likely feeding the mainstem Mark West Creek through sub-surface flows, even when there is no surface water connection. Therefore, TWA's (2011) claims that the Project has no impact on steelhead and coho salmon Critical Habitat in Mark West Creek is not correct.



F.F-7 cont.

Figure 12. This diagram from Winter et al. (1998) (Figure G-3A) shows the stream temperature profile versus the area immediately adjacent to the stream bed, which is indicative of a gaining stream, similar to that described by Acomb (2011a) in the mainstem Mark West Creek immediately downstream of the North Fork.

Furthermore, the current impacts caused by prior projects that already cause North Fork Mark West Creek to go dry prematurely, will couple with those of the proposed Cornell Winery Project and will likely eliminate or degrade the functional habitat patch just downstream of the North Fork described by Acomb (2011a) and that harbors the coho salmon depicted in Figure 4. In essence the North Fork is becoming a "losing" stream in a geologic frame of reference, a concept not discussed by TWA (2011).

NMFS (2010) expressed concern about the impacts of water diversion and impacts in the region to coho salmon:

> "Water diversions during the summer rearing period magnify the impact of natural low flows with pronounced impacts to juvenile survival."

Winter water withdrawal for frost protection is also causing harm to coho salmon in the Russian River basin (NMFS 2009) and the SWRCB (2011) has crafted a policy to attempt to remedy this problem. Although the major problem areas are on the valley floor of the Russian River, NMFS (2009) has also identified potential problems in the vicinity of the Project for vineyards to diminish flows in upper Mark West Creek as well.

Acomb's (2011b) observations regarding flow fluctuations in the North Fork indicate that pumping activities somewhere in the watershed were causing stream fluctuation observed by him on August 26, 2011:

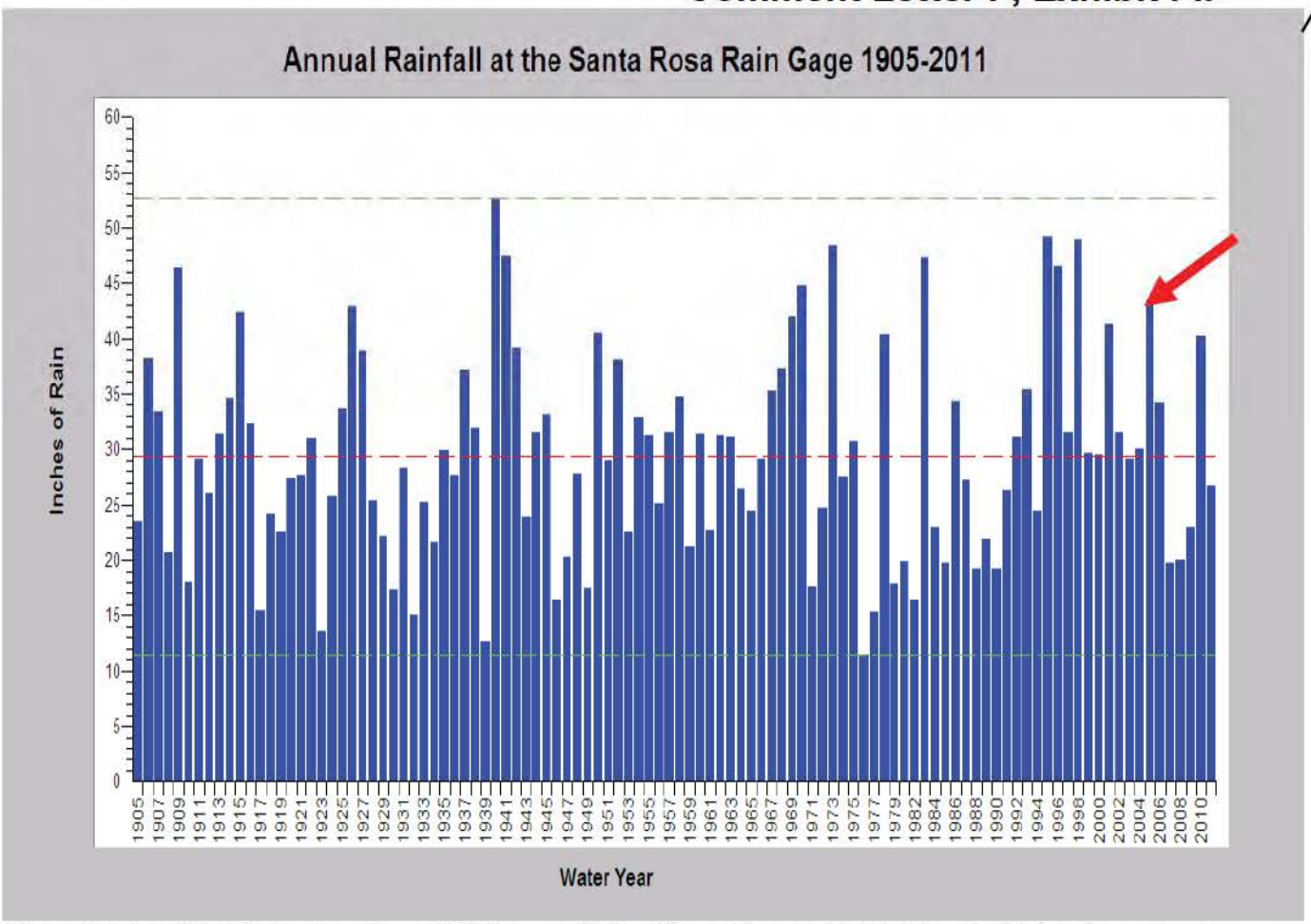
"The two pools surveyed showed signs of rapid decreases in water evidenced by relatively long wetted margins of the pools. Usually receding water levels drop slowly enough to allow the substrate to dry and leave a rather small wetted margin. It was decided that if the pools continued to dry the fish present in them would perish due to lack of water."

Winter et al. (1998) provide insight into mechanisms driving the fluctuation and de-watering: "Changes in streamflow between gaining and losing conditions can also be caused by pumping ground water near streams. Pumping can intercept ground water that would otherwise have discharged to a gaining stream, or at higher pumping rates it can induce flow from the stream to the aquifer. Watershed resident James Doerksen (personal communication), who is also a Co-Chair of Save Mark West Creek, supplied a photo of the North Fork in June 2010 showing a dry stream bed (Figure 13). This is particularly early for the stream to be dry because of the very high rainfall in 2010 (Figure 14), including precipitation in May and June of that year. This premature stream desiccation in a wet year is another indication that changes in infiltration and groundwater use are having serious negative effects on flows, steelhead trout and the aquatic ecosystem of Mark West Creek.

Two relevant documents bear mention in relation to changes in hydrology before completing discussion of surface and groundwater. The SWRCB (1998) found Mark West Creek to be fully appropriated with regard to stream flow; therefore, the County of Sonoma PRMD should not be allowing projects that disrupt water supply and add to water consumption, such as the Cornell Winery Project. In addition, California Department of Water Resources (DWR 2005) Senior Engineering Geologist Christopher L. Bonds said that well tests were not sufficient to judge groundwater availability and recommended tests of the appropriate duration and in the appropriate season. These additional tests have never been conducted.

F.F-7 cont.

Figure 13. North Fork Mark West Creek upstream of its convergence with the mainstem and above St Helena Road below the Project. The picture was taken in June 2010 when the stream should have had flow due to a wet year, including rainfall in May and June. Photo provided courtesy of Jim Doerksen.



F.F-7 cont.

Figure 14. Rainfall at Santa Rosa from 1905 through 2011 with a red arrow highlighting the higher than average rainfall in 2010 that should have maintained surface flow in the NF Mark West Creek, but instead it went dry prematurely, likely due to groundwater pumping. Data from the California Data Exchange Center.

Sediment Contributions and Impacts to Coho Salmon and Steelhead Critical Habitat: TWA (2011) dismisses the problem of excess sediment yield known to be associated with the Project, and its downstream impacts. The following statement under Mitigation 7 (p 96) is exemplary:

> "The Storm Water Management Plan includes several measures designed to control storm water quality, including rainwater harvesting and treatment, rain gardens, vegetated buffers, paved area disconnect, interceptor trees, and velocity reduction, which will greatly reduce sediment runoff during operation of the project, and Best Management Practices employed during construction will minimize sediment runoff during construction."

This statement ignores significant mass wasting risk (Cotton, Shires & Assoc. 2010):

> "Based on our field observations, we confirmed the presence of large, deep-seated landslides north, northeast, northwest and west of the proposed winery site. It appears that multiple apparent landslides have the potential to impact the proposed building footprint." (p 4)

The proposed winery has since been moved to a different location on the property. However, just as the previous winery site was on and surrounded by landslides, winery consultant geologists RGH's maps indicate that the presently proposed winery site is immediately adjacent to landslides on both descending slopes (Raymond Waldbaum personal communication) Waldbaum (2011a) points out that water deflected from impervious surfaces had the potential to load failure plains and to trigger mass wasting, including the "rain gardens" and rock deflectors touted as mitigations.

F.F-8

Waldbaum's (2011a) additional findings were that 1) rainfall and runoff are likely substantially underestimated by Project environmental studies (Atterbury and Associates 2010), 2) slope failure has already occurred as a result of sewage effluent draining onto a steep hillside within the Project area, and 3) addition of wine factory sewage onto slopes has a high risk of triggering mass wasting. Although Project proponents claim that the previous landslide below the septic leach field was a natural failure, Waldbaum (2011a) rejects that contention based on the fact that the slope failed only where additional water was contributed to the leach field.

Even if contributions of surface erosion from existing vineyards and newly landscaped areas is prevented, mass wasting is likely with potential catastrophic effects on the North Fork of Mark West Creek and the mainstem downstream. Excess sediment supply to streams is known to reduce pool frequency and depth (Bauer and Ralph 1999) and coho juveniles and older age steelhead juveniles are known to require deeper pools in order to survive. The width to depth ratio of a stream also increases in response to elevated sediment that in turn makes the stream prone to warming, which is adverse for both coho and steelhead (Bauer and Ralph 1999). Fine sediment can also cause decreased bed permeability, which can lead to reduced exchange with the hyporheic zone (Poole and Berman 2000) that is an important cooling mechanism for streams (Winters et al. 1998). Sediment that fills interstitial spaces in the stream bed may also decrease aquatic macroinvertebrate production (Barbour et al. 1999) that are an important food resource for juvenile salmonids and lessen egg survival and successful emergence of fry (McNeil and Ahnell 1964). Suspended sediment can also reduce the ability of juvenile salmonids to feed (Sigler et al. 1984), especially if periods of chronic turbidity are prolonged (Newcombe and McDonald 1991).

F.F-8 cont.

Li and Parkinson (2008) found that impacts from landslides on the Cornell Vineyard property in 2006 caused substantial changes to the stream channel downstream and that the "level of impact should qualify as adverse modification of critical habitat" (see Habitat). TWA (2011) ignores these sediment impacts to streams and makes no reference to Li and Parkinson (2008), even though it was part of the record at the Sonoma County PRMD. New impacts associated with the Cornell Winery Project would couple with those already initiated by the previous vineyard project and rising to an unacceptable level of sediment related cumulative effects in the North Fork and in downstream reaches of Mark West Creek, if permitted and developed.

Water Temperature: Water temperature data from various sources (IFR 2003) show that Mark West Creek is highly impaired with regard to its ability to support juvenile coho salmon and steelhead (Welsh et al. 2001, Sullivan et al. 2000). Coho salmon cannot reside in a stream where the maximum floating weekly average water temperature (MWAT) exceeds 16.8^{O} C or 62.2^{O} F (Welsh et al. 2001, U.S. EPA 2003). The only Mark West site that is suitable is site #11, which is just upstream of the North Fork (Figure 15-16). Sullivan et al. (2000) found that steelhead growth was suppressed by 10% at 17^{O} C and 20% when the average temperature exceeded 19^{O} C. Lower numbered reaches are those further downstream and Mark West Creek increases in temperature in a downstream direction, although this was probably not its historic condition.

F.F-9

Figure 16 shows ranges of water temperatures in Centigrade (C) by sampling site based on SCWA 1999-2001 data showing the maximum MWAT for all three years. The stream reach overlay is based on data collected during SCWA habitat typing surveys in 1996-1997 and show that Mark West Springs Creek and lower Weeks Creek were suitable for coho salmon. The U.S. EPA (2003) makes the following statement regarding flow volume and water temperature, which applies to Mark West Creek:

> "Water withdrawals from rivers for purposes such as agricultural irrigation .... result in less river volume and generally remove cold water. The temperatures of rivers with smaller volumes equilibrates faster to surrounding air temperature, which leads to higher maximum water temperatures in the summer."

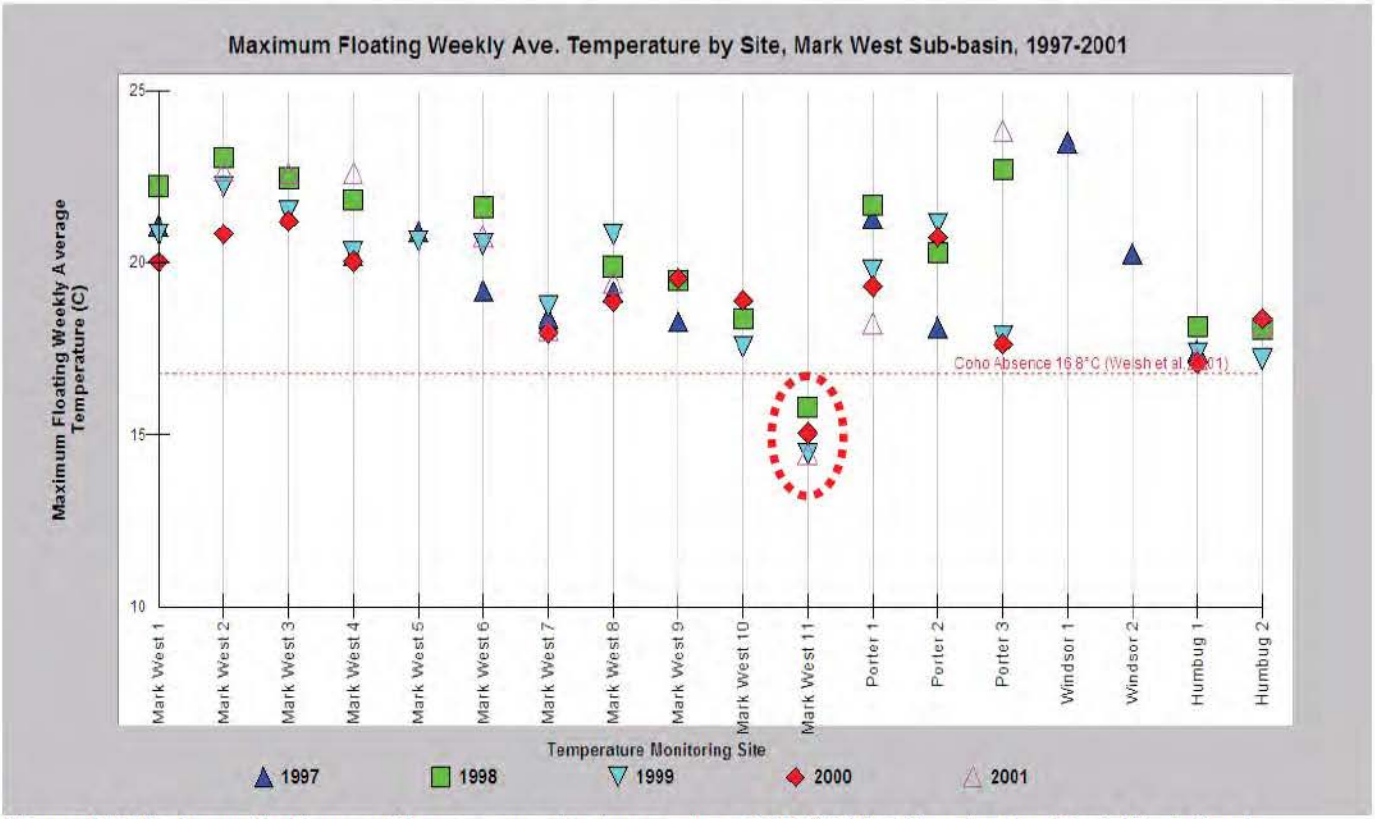


Figure 15. Maximum floating weekly average water temperature (MWAT) for 11 mainstem Mark West Creek locations and tributaries Porter, Humbug and Windsor creeks. Data from SCWA and KRIS Russian (IFR 2003).

F.F-9 cont.

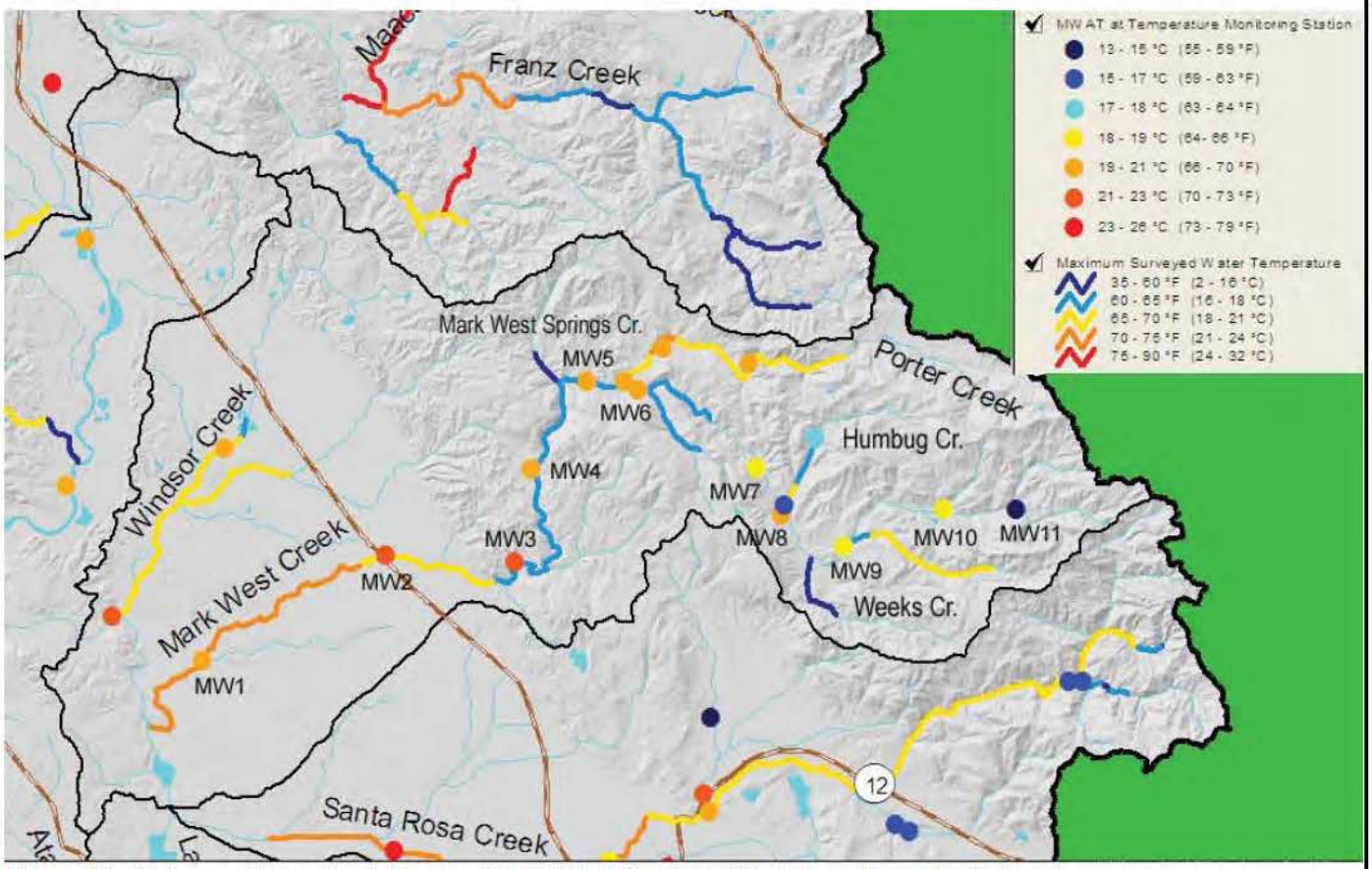


Figure 16. This map shows the stations on Mark West Creek and its tributaries and whether temperatures are supportive of coho salmon juvenile rearing. Only Site #11 just above the North Fork had an optimal temperature in all years measured (1997-2001). Data from SCWA and map from KRIS Russian River.

The nature of the progressive warming of the mainstem Mark West Creek shown by both data sets in Figure 16 indicates that water temperature is increasing instead of cooling as it once did, because it has become a losing not a gaining stream due to cumulative water domestic and agricultural withdrawals now occurring. While the MWAT is a summary statistic showing the hottest floating weekly average temperature, Figure 17 shows continuous floating weekly average values at various Mark West Creek water temperature sites measured by SCWA in 1999 (IFR 2003). Flows were high and temperatures low in 1999 and the result was water temperature suitable for parts of the summer below Van Buren Creek (MW 9) and downstream of Humbug Creek (MW7). These cold water reaches must be maintained and expanded through implementation of water conservation, if the NMFS (2010) Recovery Plan goal of coho re-establishment between 2009-2019 is to be attained.

Examination of Porter Creek water temperatures shows that it has a warming influence on the mainstem Mark West Creek (Figure 17). When the floating weekly average water temperature of lower Porter Creek in the years 1999, 2000 and 2001 is analyzed (Figure 18), data show that this reach is above the range of suitability for coho salmon in all years according to regional studies (Welsh et al. 2001). This highlights the importance of the cold water refugia in upper Mark West Creek and the reach immediately below the North Fork. It also shows that there is a need for water conservation implementation in Porter Creek and other efforts like increasing shade to make it suitable for coho salmon being planted there as part of the captive broodstock program as reported by TWA (2011).

The coldest water spot at MW 11 and MW 10 just downstream needed to be protected and expanded, if Pacific salmon species are to be successfully restored (Bradbury et al. 1995), which is exactly the opposite of what will happen if the Cornell Winery Project is approved and built.

The high water temperatures at most stations within the Mark West Creek watershed indicate that there is a major habitat bottleneck developing for juvenile salmonid rearing capacity. When such thermal problems are widespread and likely to take some time to remedy, it is important that existing cold water sources or refugia are maintained (U.S. EPA 2003). Local refugia in upper Mark West Creek are associated with hyporheic flow, which Poole and Berman (2001) characterized as follows:

> "The two-way exchange of water between the alluvial aquifer and stream channel (hyporheic flow) is perhaps the most important stream temperature buffer."

Any additional withdrawals from the North Fork aquifer will lessen hyporheic flow to important stream reaches in Mark West Creek immediately downstream of the identified refugia. Flow depletion within the North Fork will also impact downstream reaches of Mark West Creek along with previously permitted or unpermitted diversions. TWA (2011) does not mention water temperature, which is indicative of its insufficiency with regard to cumulative watershed effects.

F.F-9 cont.

Habitat Typing Data Indicative of Cumulative Effects

The SCWA conducted habitat surveys of Mark West Creek and its tributaries, Porter, Mill, Van Buren and Humbug creeks in 1996-1997 (Figure 19), according to CDFG (2004b) protocols. Although these data are from approximately 15 years ago, they are still useful in understanding conditions for fish. Pool frequency of 40% by length is considered optimal for salmonid spawning and rearing (CDFG 2004b) and most Mark West Creek reaches were over or near this level (31-48%). However, pool frequency by length in several reaches of Porter, Van Buren, Mill and Weeks creeks were less than 20%, which likely indicates pool filling due to excess sediment contributions. In addition, extensive dry stream reaches surveyed indicate either stream desiccation due to water withdrawal or loss of surface flow due to aggradation or a combination of both. Note that a reach of middle Mark West Creek (Reach 04) also was dry during the 1996-1997 survey. The evidence strongly suggests that these reaches have gone from gaining streams to losing ones due to too much water withdrawal.

F.F-10

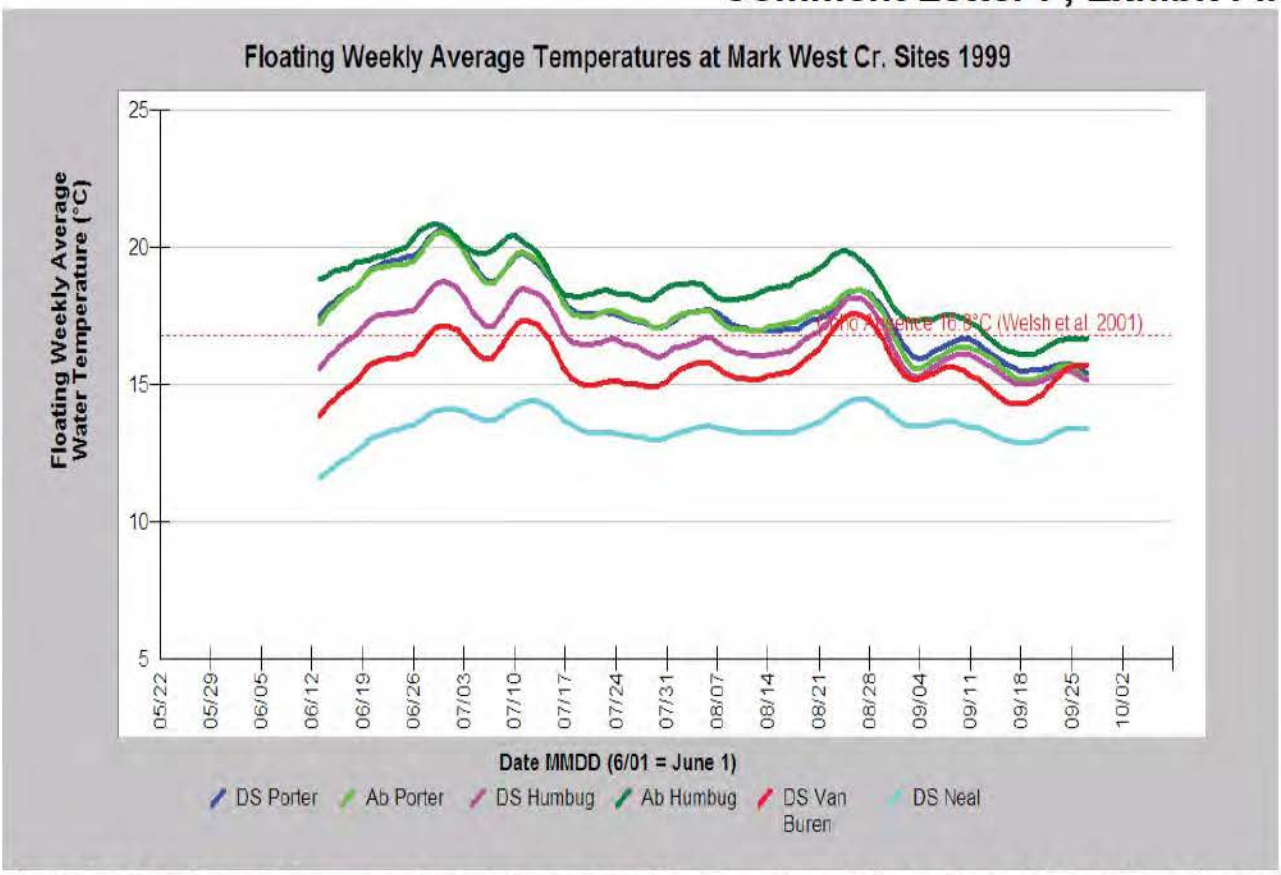


Figure 17. Floating weekly average water temperatures from June through September at 6 Mark West Creek water temperature monitoring locations. Data show downstream warming trend with only the site downstream of Neal Creek and upstream of the North Fork in the range suitable for coho. Data from KRIS Russian River (IFR 2003).

F.F-10 cont.

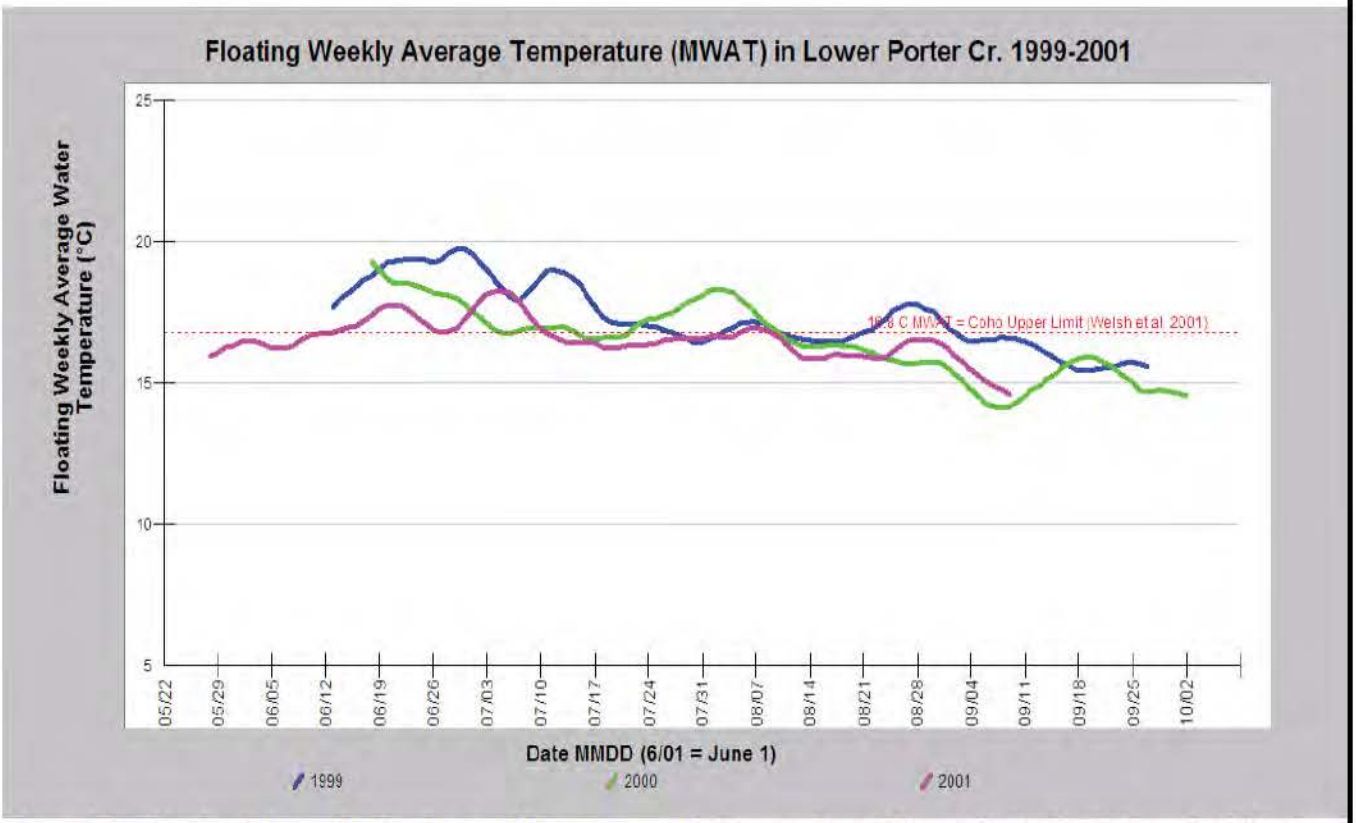


Figure 18. This chart shows the floating weekly average water temperature of lower Porter Creek from late May to mid-to late September 1999-2001. Temperatures were over levels that supporting coho salmon, although there were some periods in each year when conditions were suitable. Data from SCWA and KRIS Russian (IFR 2003).

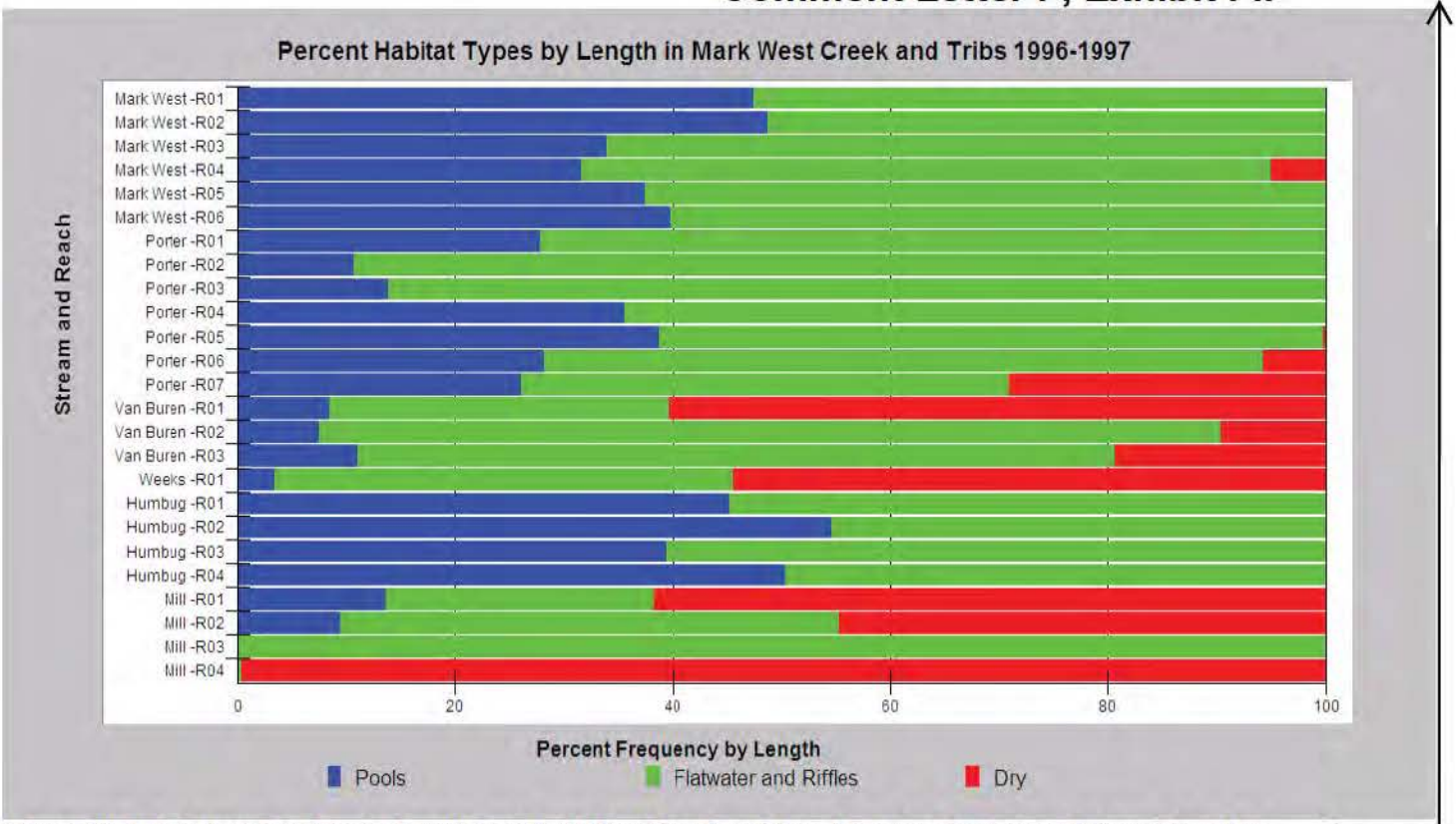


Figure 19. Habitat typing data by length for Mark West Creek and its tributaries show four of six reaches that approach 40% pools, but also low pool frequency in some tributaries and extensive dry reaches likely due to flow depletion. Data from SCWA and KRIS Russian River (IFR 2003).

F.F-10 cont.

Kier Associates and NMFS (2008) is a reference document for understanding habitat conditions for coho salmon and includes the following on pool depth:

> "CDFG (2004b) habitat typing surveys always capture data on pool depth, which is the best replicable metric for trend monitoring that comes from such surveys…… Greater pool depth provides more cover and rearing space for coho and other juvenile salmonids. Deeper pools also create better shelter for migrating and spawning adults. Pool depths of three feet, or one meter, are commonly used as a reference for fully functional salmonid habitat (Overton et al. 1993; USFS 1998; Bauer and Ralph 1999; Brown et al. 1994), although much deeper pools are expected in higher order streams."

SCWA (IFR 2003) habitat typing data related to pools (Figure 20) shows that pool depths were restricted in the upper-most reach of Mark West Creek, with only 24% deeper than 3 feet and 48% less than two feet deep. Frequency of deeper pools increases in a downstream direction as is expected with increasing stream order, however, the second lowest reach decreases to only 24% of pools over 3 feet deep. This is likely indicative of major cumulative effects as noted by Montgomery and Buffington (1993) where sediment over-supply and/or increased peak discharges related to upstream or upslope land management have caused pools to fill. The problem with the distribution of habitats in Mark West Creek is that the lower reaches where pools are frequent and deep are too warm for coho salmon and older age juvenile steelhead in summer. Upper reaches and tributaries may be cool enough for these at-risk salmonid species, but pool depths restrict carrying capacity. The only way to improve conditions is to restore stream flows in headwaters, not further deplete them and to reduce sediment contributions, which is the opposite of what will occur, if the Cornell Winery Project is approved and constructed.

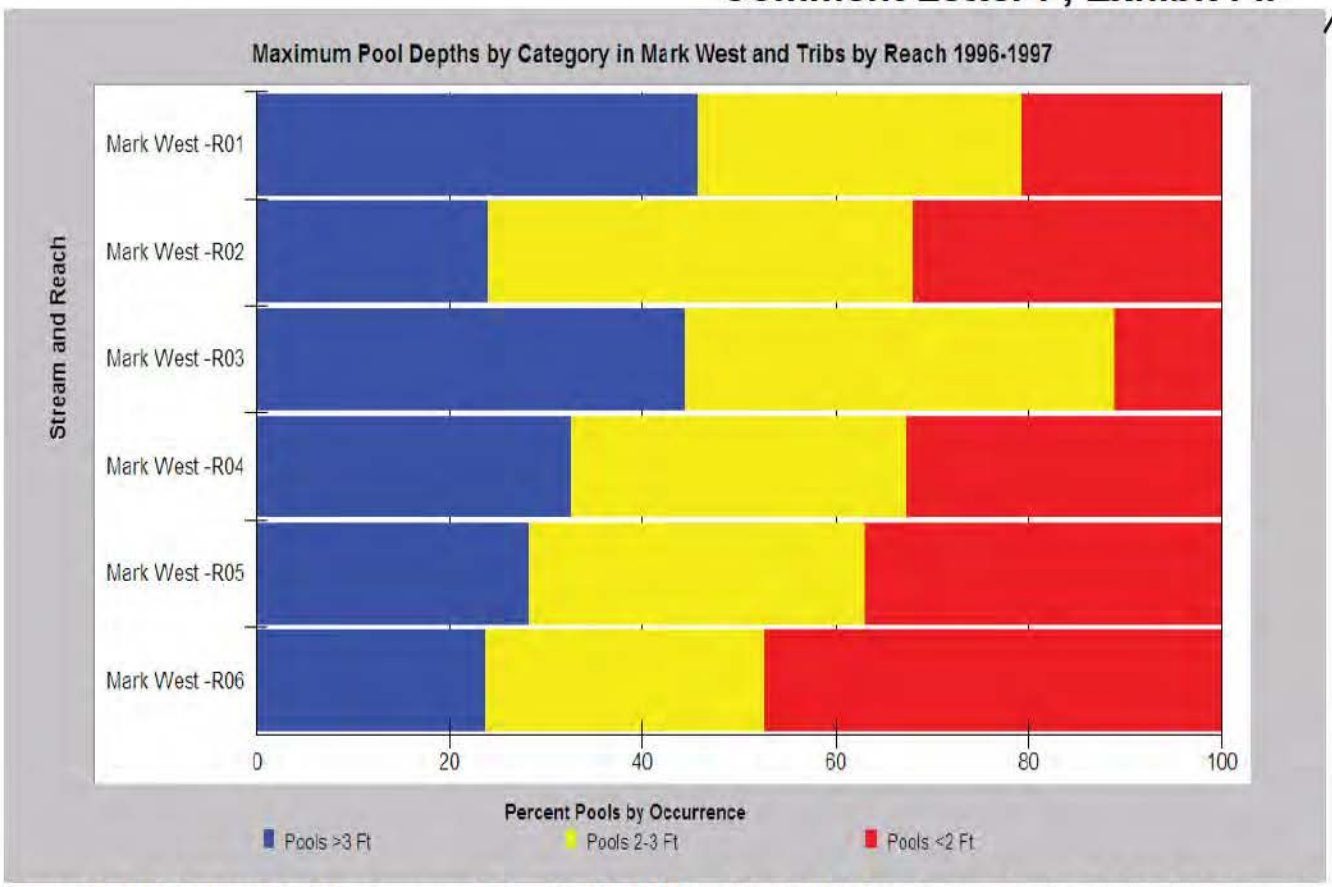


Figure 20. Habitat typing data shows pool depth in Mark West Creek with less than optimal pool depths in four of six reaches. Data from SCWA and KRIS Russian River (IFR 2003).

Subsequent to the SCWA habitat typing, Li and Parkinson (2008) surveyed the mainstem of Mark West Creek from Tar Water Bridge to just upstream of the confluence with the North Fork and found Critical Habitat for coho salmon and steelhead "adversely affected by severe sedimentation." The 10,000 cubic yards of sediment contributed to the stream by a large landslide on the Cornell Vineyard property in 2006 had caused pool frequency to diminish to just 20% of the stream by length. Li and Parkinson (2008) noted that "riffles that were inventoried had interstitial spaces clogged with sediment, which would diminish spawning gravel suitability and aquatic insect production. More importantly, they noted that aggradation of the stream bed was so severe that it caused reaches of the creek to go underground. The latter impact could also be as a result of excessive water withdrawal acting in combination with aggradation. Regardless, steelhead and coho juveniles confined in isolated pools do not benefit from insect drift as a food source, which was shown to cause juvenile steelhead to lose weight in west side Napa River tributaries studied by Dietrich and Stillwater (2002). The extent of impacts described by Li and Parkinson (2008) certainly rise to the level of "take" of both coho salmon and steelhead and adverse modification of their Critical Habitat.

F.F-10 cont.

Cumulative Effects of Legal and Illegal Mark West Creek Water Use Ignored

The study by Stetson Engineers (2007), which was part of the SWRCB WRD (2007) *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams*, determined that there were 1357 permitted impoundments in the Policy's area of interest and another 1771 unpermitted ones (Figure 21). Hundreds of legal and illegal impoundments are located in Sonoma County and many of these are within the Mark West Creek watershed (Figures 22), including on and adjacent to the project site (Figure 23). The impoundments add substantial complexity to the question of water supply. Although they are often allegedly fed by surface water runoff, in many cases they may be filled with groundwater using a pump during dry seasons. Since the ponds are usually lined, once water is

F.F-11

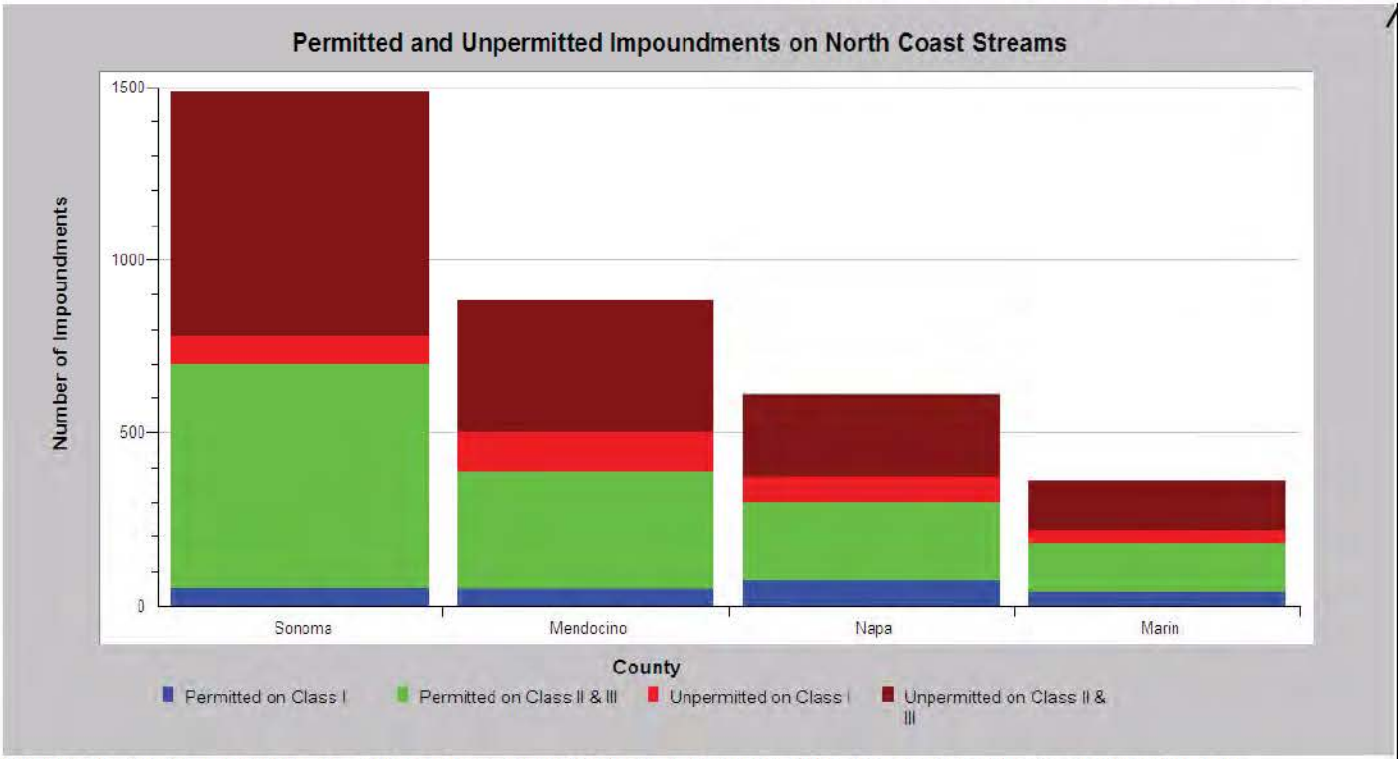


Figure 21. The number of permitted and unpermitted impoundments within the geographic area covered by the SWRCB WRD (2007) North Coast Stream Flow study is displayed above with illegal diversion impoundments outnumbering legal ones in Sonoma County. Data from Stetson Engineers (2007a).

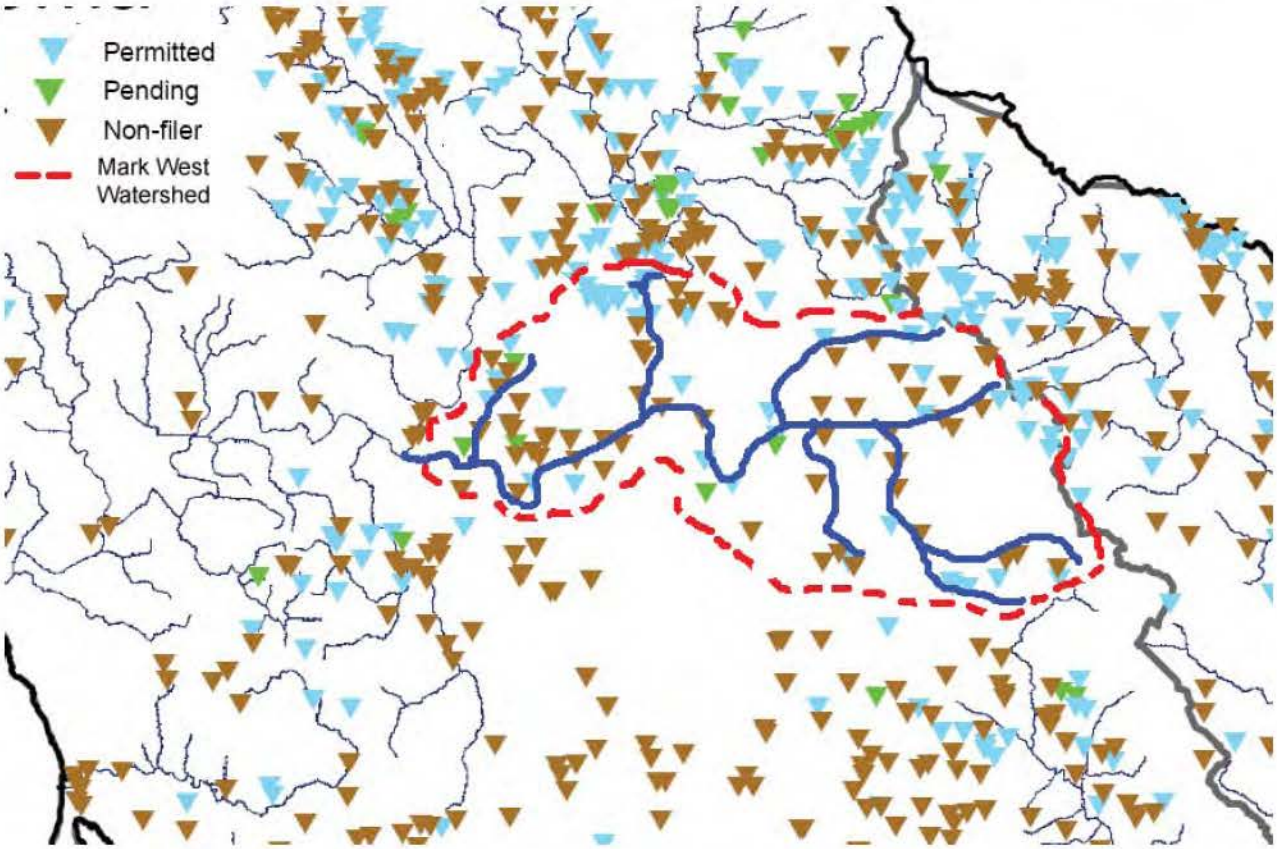


Figure 22. Map shows impoundments by categories of permitted, unpermitted and pending and is modified from Stetson Engineers (2007). The approximate Mark West stream location (dark blue) and watershed boundary (red dash) were added. Note the large number of unpermitted diversions within the Mark West Creek watershed.

F.F-11 cont.

Figure 23. This aerial view is of the Project site with the convergence of the North Fork and Mark West Creek at left (blue dashed oval). Red arrows highlight impoundments for agricultural water storage that do not have permits from the SWRCB WRD as required and are part of a larger pattern of illegal water use. Map from Google Earth.

withdrawn from the aquifer, it is no longer available as a surplus to supply cool water needed for fishes.

F.F-11 cont.

Even if the numerous impoundments within the Mark West Creek watershed only caught surface runoff, they would cause complex hydrologic cumulative effects. During peak rain events, full reservoirs act similarly to total impervious area and can add to damaging increased peak flows during major flood events as noted by Jackson (2009) in the Napa River basin. When all reservoirs are filled simultaneously with the first rains of fall or winter, Chinook and coho salmon spawning migrations may be impeded (Band 2008). In a drought year, adult steelhead may be similarly stranded or unable to migrate to spawning grounds due to reservoir induced drops in flow. When reservoirs are filled in summer using stream flows or connected groundwater, nearby streams may dry up.

Often Sonoma County PRMD issues grading permits for reservoir construction even when there is no proof of the appropriative water rights required by the SWRCB to allow for their legal use (Kimberly Burr, personal communication). This leads to the proliferation of unauthorized impounding of water needed to keep adequate flow in neighboring streams to the detriment of healthy salmonid populations. Other impoundment related impacts that Sonoma County should be considering are effects of legal and illegal impoundments on water temperatures, the potential they have for introduction of bull frogs that decimate native frog populations, and their contribution to release of non-native warmwater fish that predate upon salmonids or displace them through competition (Higgins et al., 1992)(see Invasive Species). The ponds adjacent to the proposed Project site are not permitted by the SWRCB WRD and the agency has failed to take appropriate action to enforce its prohibition of such construction (Higgins 2008a) and the Sonoma County PRMD continues to ignore this huge cumulative effects problem that is eliminating cold water habitats. Sonoma County PRMD and the California SWRCB WRD have ignored over-appropriation of water and illegal water use (Stetson Engineers 2007, Higgins 2008a, 2008b) leading to a chronic and widespread violation of the federal ESA and CESA, including the North Fork and upper mainstem Mark West Creek.

Deitch et al. (2009) documented similar problems to those developing in Mark West Creek in the Franz and Maacama creek watersheds that are just to the north:

> "Instream diversions such as those in the Franz and Maacama catchments withdraw water when needed; this tends to occur during periods when streamflow is naturally low. Stable summer base flow is increasingly scrutinized as an essential factor for the persistence of anadromous salmonids in the region (RWQCB, 2005); if small instream diversions have similar effects throughout the northern California wine country, the changes that small water projects cause to the natural flow regime may play a principal role in limiting valued ecological resources such as anadromous salmonids throughout the region."

F.F-11 cont.

Invasive Species Associated with Development and Impacts to Native Fauna

TWA (2011) clearly describes conditions that show advanced problems with invasive species colonization of ponds on or near the Project:

> "Both ponds are occupied by a variety of non-native, predatory fish including largemouth bass, bluegill, and western mosquitofish (*Gambusia affinis*) and non-native bullfrogs."

The bull frog is highly predatory and the un-natural ponds created by irrigation impoundments are ideal habitat for it. Thus, the Cornell Winery Project will not only further alter habitat in an adverse way for mountain yellow-legged frogs and red-legged frogs, it will promote competition that insures their demise. The native western pond turtle will also be displaced and out-competed as acknowledge by TWA (2011).

F.F-12

> "The presence of predatory fish and bullfrogs in both ponds would limit survival of turtle hatchlings after moving from the terrestrial nests to the water."

TWA (2011) acknowledges that all three of these species are designated by CDFG as Species of Special Concern and that the red-legged frog is federally listed under ESA as Threatened. The information supplied suggests that development of the Cornell Winery Project will cause a "take" of the latter.

Non-native warmwater game fish were obviously introduced into the ponds, which would require CDFG permits, or may have been done illegally, but TWA (2011) does not provide any information in this regard. Blue gill were present in Mark West Creek electrofishing samples associated with habitat surveys (Figure 8). The escape of warmwater fish to Mark West Creek from Project ponds could have negative effects on listed salmonid species with regard to competition and predation.

Proposed Project Mitigations Will Not Prevent Cumulative Watershed Effects

The mitigations proposed to offset Project impacts will not be nearly sufficient and TWA's (2011) justifications and explanations of these measures and their remedial actions are not scientifically credible. The overall Project impacts of increased peak flows, depleting groundwater, decreasing base flows and hyporheic recharge described above might be lessened in part by mitigations, but any additional effects are undesirable. TWA (2011) mitigations are listed below followed by comments related to their sufficiency.

F.F-13

Mitigations offered by TWA (2011) that transplant live oak trees from the footprint of the winery building and strategically planted "interceptor" trees are merely a small token gesture in comparison to the effects of legally and illegally clearing many acres of coniferous forests on and adjacent to the

Project site. "Rain gardens" are vegetated depressions designed to catch storm water, but Waldbaum (2011a) points out that these will discharge concentrated water onto unstable slopes decreasing slope stability and increasing erosion and landslide potential. Vegetated buffers and rock swales placed to catch runoff from impervious surfaces will have a similar potential impact according to Waldbaum (2011a). The claim by TWA (2011) that using Best Management Practices according to a Storm Water Pollution Prevention Plan will prevent on-site impacts is refuted by Waldbaum (2011a).

Where TWA (2011) is woefully inadequate with regard to California Environmental Quality Act (CEQA) compliance is with regard to cumulative watershed effects. TWA (2011) is very myopic in terms of its linkage to watershed-wide problems (Kamman 2007). Dunne et al. (2001) define cumulative effects as follows:

> "Generally speaking, the larger the proportion of the land surface that is disturbed at any time, and the larger the proportion of the land that is sensitive to severe disturbance, the larger is the downstream impact. These land-surface and channel changes can: increase runoff, degrade water quality, and alter channel and riparian conditions to make them less favorable for a large number of species that are valued by society."

F.F-13 cont.

Dunne et al. (2001) also point the problems that arise when projects are looked at individually and not in conjunction with all activities in a watershed. They warn that at-risk populations of aquatic and terrestrial species can be lost, if cumulative effects are ignored and anthropogenic stressors continued:

> "The concern about cumulative effects arises because it is increasingly acknowledged that, when reviewed on one parcel of terrain at a time, land use may appear to have little impact on plant and animal resources. But a multitude of independently reviewed land transformations may have a combined effect, which stresses and eventually destroys a biological population in the long run."

Discussions above have clearly shown that disturbance from urbanization, rural development and agriculture are extensive in the Mark West Creek watershed and that cumulative effects to the aquatic ecosystem are advanced. The location of the Project at the source of flows for Mark West Creek and steep and unstable terrain underlying the project area increase cumulative effects risk. TWA (2011) never uses the term cumulative effects let alone analyze how the Project elevates risk and likely impacts. This includes degradation to Critical Habitat for coho and steelhead downstream and off-site that will amount to a "take" under ESA as demonstrated above.

Coho Captive Broodstock Project Failing As Cold Water Habitat Loss Continues

The Captive Broodstock program for coho salmon that used fish from Mark West Creek and Green Valley Creek (Conrad et al. 2005, CDFG 2004a) has a substantial associated monitoring component carried out by the University of California Cooperative Extension (UCCE 2011, Obedzinski et al. 2006, 2007, 2008). Data collected by this project shows widespread coho juvenile absence in planted streams, which suggests that restocking is not working. Higgins (2011) points out the likely linkage between flow depletion, habitat loss, and increased water temperatures that would prevent success. NMFS (2010) also confirmed that coho salmon are disappearing from Green Valley Creek, which was the only basin where they were perennially present from 1999-2001 in the Russian River basin:

F.F-14

> "Wild young of the year (YOY) coho salmon have not been detected in Green Valley Creek since 2004 (M. Obedzinski, U.C. Davis Extension, personal communication, 2007). Since YOY coho salmon have not been detected for three consecutive years, this may indicate that wild coho salmon have been extirpated from Green Valley Creek" (p. 115).

NMFS (2010) ascribes the loss of Green Valley Creek coho salmon to depleted flow:

> "Stream desiccation is related to intensive groundwater pumping and other water uses associated with agricultural, rangeland, and residential developments."

Obedzinski et al. (2007, 2008, 2009) report that adult coho returns have not increased in the other Russian River tributaries, despite planting of thousands of juveniles from the captive broodstock program. Several thousand coho juveniles from the captive broodstock program were planted in 2006 and 2007 in Green Valley Creek (Obedzinski et al. 2009). Although no adult coho returned in 2009, seven adults did spawn in Green Valley Creek in 2010-2011 (UCCE 2011). Wild coho juveniles found in 2011 in Mark West Creek suggests they also recurred in that watershed. Since coho spawn almost exclusively at age 3, rebuilding weak brood years is very difficult. In order for expensive recovery efforts to restore Russian River coho salmon using captive broodstock in Green Valley Creek and Mark West Creek to be successful, adequate flows must be maintained and restored.

F.F-14 cont.

Historic patterns of land disturbance from fires, earthquakes or other natural disasters sent pulses of sediment and large wood into channels, but such disturbances were rare and restricted in geographic extent (Reeves et al. 1995). Reeves et al. (1995) characterize this natural disturbance regime as a "pulse disturbance" and make a distinction versus watershed-wide alterations now caused by humans they term "press disturbances." Salmonid populations would stray to un-impacted watersheds and then recolonize after stream reaches or tributaries had healed over time, but populations may go extinct if there are no relatively undisturbed watershed areas and aquatic refugia to support fish during large storm events or droughts. There is currently a "press disturbance" in the Russian River basin related to water use described above. Bisson et al. (2009) noted that, in order to restore conditions suitable for at-risk Pacific salmon species, watershed processes need mimic those with which they co-evolved, including flows.

Climate Cycles and Global Warming Not Compatible with More Water Diversion

Hare et al. (1999) described the climatic and oceanic variations known as the Pacific decadal oscillation (PDO) cycle that affects salmon populations of the northern California region. Positive ocean cycles coincide with wet on-land conditions for a period of about 25 years, and then alternate with ocean conditions prone to warm El Nino events and periods of lesser rainfall. Productive PDO conditions prevailed from 1950-1975 and adverse ocean and dry on-land conditions extended from 1975-1995 (Collison et al. 2003). The favorable PDO conditions since 1995 have resulted in higher precipitation and mostly productive ocean conditions that favor salmon and steelhead growth and survival.

F.F-15

Climate change is likely to induce higher variability in weather patterns (ISAB 2007). The switch of the PDO to dry on-land and poor ocean productivity in 1975 was followed by the 1976-77 drought and the record inter-annual drought from 1986-1992 also came during this cycle. This means that there will likely be an equal or more severe series of droughts after the predicted PDO switch sometime between 2015-2020 (Collison et al. 2003). TWA (2011) does not mention climate change, although its effects are well recognized and advanced, or that water resources will likely become more scarce.

Conclusion

Existing cumulative effects in the Mark West Creek watershed are widespread and the Cornell Winery Project will contribute to these effects in ways that cannot be mitigated. TWA does not address many of these effects and the investigative data behind its conclusions are inaccurate and incomplete. The impacts of this Project will have irretrievable and irreversible effects on coho salmon and steelhead

F.F-16

production immediately downstream and adjacent and with ripple impacts to the entire Mark West Creek aquatic ecosystem. NMFS (2010) describes the situation for coho salmon as this:

> "These few fish represent the struggling remnants of a once abundant species and a thread back in time, not so very long ago, when our creeks were clean, cool, and flowed unimpaired from their headwaters to the sea."

More than rhetoric will be needed to restore coho salmon in the time frame of 2009-2019 (NMFS 2010). An ecosystem based approach to resolving Mark West Creek water flow and temperature impairment to make it compatible with coho restoration needs to follow guidance of current best-science principles as summarized by Bisson et al. (2009):

F.F-16 cont.

> "Management of the freshwater habitat of Pacific salmon should focus on natural processes and variability rather than attempt to maintain or engineer a desired set of conditions through time."

The watershed processes that have created the cold, clear waters of Mark West Creek have been so disrupted that the coldwater ecosystem is at a tipping point. Bradbury et al. (1995) point out that patches of functional habitat or refugia, such as upper Mark West Creek, need to be protected as a priority in restoration planning. The Cornell Winery Project will drive the watershed further from its normal range of variability and should not be permitted in one of the last refugia for steelhead and coho in the Russian River basin.

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EXHIBIT G

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MEMORANDUM

To: Laura Waldbaum, NOWWE
Date: December 12, 2011

SUBJECT: **Biological Resources Report for the Cornell Winery Project** (Winfield, Stromberg Fawcett & Wiemeier, September 14, 2011) – **assessment of special-status plant species impacts and adequacy of mitigation.**

I have reviewed the vegetation and special-status plant sections of the September 2011 Biological Resources Report (BRR) prepared by Ted Winfield with assistance from Larry Stromberg. One of the potentially significant impacts of the Cornell Winery projects identified by the BRR was destruction of established colonies of California narrow-anthered brodiaea (*Brodiaea californica* subsp. *leptandra*), a special-status rare perennial corm-bearing plant listed by the California Native Plant Society as 1B.2 (rare in California and elsewhere, fairly endangered in California; BRR p. 51). *B. californica* subsp. *leptandra* occurs at the proposed project impact area (construction disturbance footprint) at three discrete colonies within chaparral, coyote-brush scrub, and oak woodland vegetation. Colony sizes of approximately 70, 50, and 20 plants, or 140 total (BRR p. 92).

The BRR also reports that "the **bulbs** were collected for replanting at selected sites within the project area (BRR p. 51; bold added), and that "**Seeds** were collected from the plants present at the Project site in 2010 and stored to be used to establish this species in suitable habitat that is not affected by Project construction or operation (BRR p. 92). The statement of bulb removal on p. 51 does not disclose whether the "bulbs" (corms) of *B. californica* subsp. *leptandra* were exhaustively or partially removed from the proposed impact area, or whether they were removed by the applicant or a qualified biologist. The lack of a qualifier like "some" or "most" bulbs (corms) suggests that the entire population of corms was removed.

F.G-1

The digging and removal of all the corms (perennating structures of the species) as well as all seeds would itself constitute complete or nearly complete destruction of the population of this rare plant prior to permit issuance and CEQA. This would be a significant impact and prejudice the outcome of avoidance or minimization elements of mitigation and alternatives analysis pursuant to CEQA. From a CEQA perspective, the environmental baseline is normally established by the date of a notice of preparation of a CEQA document, "before

the commencement of the project" (CEQA Guidelines 15125). For purposes of impact analysis and mitigation assessment, the pre-emptive removal of the rare plant population prior to completion of CEQA and project authorization must be disregarded, and the population must be treated as existing and a potential impact. To do otherwise would be inconsistent with CEQA guidelines at 15125, and reward deliberate degradation of the environmental baseline with reduced burden of impact analysis and mitigation, contrary to the basic purposes of CEQA.

The presence of multiple colonies of different sizes suggests that there has been a viable population of this subspecies that is well-established and possibly expanding. The extent of the dormant seed bank of the species beyond the population of perennial plants (corms) has not been determined or estimated. The loss of this population, or reduction of its viability to the threshold at which it may undergo long-term decline, would cause extirpation of one of only 28 known occurrences, many of which are threatened with declines or extirpation (BRR p. 51). This would be a significant direct impact to the population, and a significant cumulative impact to the survival and recovery of the rare species as a whole.

F.G-1 cont.

Reducing the direct and cumulative impacts of the project on *B. californica* subsp. *leptandra* would require either (a) reconfiguring the project footprint to avoid both the population and a buffer zone around it; or (b) successful long-term establishment of translocated (transplanted) corms and seedling-grown plants derived from the local population, with a minimum of 3 viable colonies that are either stable or gradually increasing in size and spread over time, as a form of compensatory mitigation. The BRR has proposed no avoidance or minimization measures to protect or minimize impacts to existing populations, and has in effect precluded them by pre-emptive removal of the population prior to project authorization and construction. Compensatory mitigation based on translocation of corms therefore must be demonstrated to be feasible and effective for replacing the lost population. Otherwise, compensatory mitigation based on translocation of this subspecies must be regarded as experimental and uncertain, since there is no established precedent or empirical results of population translocation for this or closely related species of *Brodiaea* or related genera with similar ecology. Proposals for translocation of rare plants without scientific basis is more rationalization of destruction than mitigation methodology (Falk and Olwell 1992) .

F.G-2

Exclusive reliance on experimental compensatory mitigation methods would require offsetting the inherent risk of failure associated with transplanting new populations to receptor sites with uncertain environmental suitability (competition from native and invasive non-native plants, soil, drainage, below-ground and above-ground herbivory) and post-transplanting conditions that may circumstantially constrain establishment (e.g., post-transplanting winter drought, augmented herbivory due to soil disturbance or irrigation, multi-year droughts).

There is a substantial burden of evidence for transplantation (translocation) of rare plants to provide mitigation in California and elsewhere. After scientifically reviewing constraints and uncertainty inherent in native plant translocation efforts, the California Native Plant Society

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(CNPS 1998) opposed the use of salvage and transplantation as mitigation for impacts to rare and listed plants, based on expert consultation of its Rare Plant Scientific Advisory Committee in 1991. Unauthorized and non-expert translocation of California rare plant populations can threaten rare plants, and often fail the essential criterion of maximizing probability of population persistence and resilience (Howald 1996).

In a review of 53 transplantation projects involving 40 special-status plants, prepared by rare plant expert Peggy Fiedler for the California Department of Fish and Game (Fiedler 1991), only 13% of translocation projects were assessed as successful. In its 5-year review of a related federally listed *Brodiaea* species, *B. filiformis*, the U.S. Fish and Wildlife Service (USFWS 2009) determined that translocated populations have highly variable and limited rates of success. The Service recommended that translocation of *B. filiformis* should be used only when no other option for onsite conservation is possible, because of uncertainty of long-term establishment of viable translocated populations.

A recent review of conservation measures for a a *Brodiaea* relative, *Triteliea grandiflora*, (Ladyman 2010) for the U.S. Forest Service, concluded that inherent risks exist in the process of translocation, since translocation in itself involves threats to the plants being moved. For this corm-bearing perennial, transplanting was considered to be much riskier and less desirable than conserving the species in place. There appears to be no scientific or practical technical support for a presumption of compensatory mitigation success in translocation of perennial corms of *Brodiaea* or related *Tritelia* species. The burden therefore lies squarely on a scientifically sound mitigation plan to provide a basis for (a) offsetting inherent risks (uncertainty) of translocation outcome, and (b) ensuring a likelihood of long-term persistence and viability of surviving translocated populations. No such mitigation plan has been proposed by the project applicant or its agents. The BRR provides only a conceptual outline for translocation and propagation of *B. californica* subs. *leptandra* in Mitigation 2 (p. 92).

F.G-2 cont.

Mitigation 2 (p. 92) providing only generic methods and short-term (arbitrary 3 year) population performance criteria, without criteria for the host (matrix) vegetation structure or composition, and without site-specific or species-specific assessment of technical feasibility or the probability of successful establishment of transplanted populations:

> **Mitigation 2.** Seeds were collected from the plants present at the Project site in 2010 and stored to be used to establish this species in suitable habitat that is not affected by Project construction or operation. Plants will be grown a contract nursery and planted in suitable habitat outside the Project impact area near where they occurred prior to impacts. In the spring prior to construction of the Project, any of the California narrow-anthered brodiaea growing in the Project impact area will be collected and maintained by the contract nursery for re-planting once construction has been completed.
>
> The performance criterion will require that 150 plants be flowering after

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> three years in the areas where the original plants were planted. Counts will be made during the flowering period of the species, which occurs between May and July. If after three years the number of plants is less than 150, additional seed collection and planting will occur and the flowering of the newly individuals will be monitored for another three years. (Biological Resources Report, p. 92)

The performance criteria as written would be satisfied by 3 years of survival of transplanted corms followed by progressive declines after year 3, as long as it is followed by more planting and monitoring for three additional years, regardless of the outcome (including population extirpation) after 6 years. There is no provision in the mitigation outline for contingencies such as progressive declines of translocated or supplemented populations after year 6, or for population extirpation after year 6. This is plainly unreasonable and biologically unsound compensatory mitigation for a rare plant: it essentially provides only 6 years of cultivation followed by abandonment regardless of the population's reproductive status or demography (population dynamics). The minimum requirement for biologically meaningful compensatory mitigation would be establishment of viable population over a long-term monitoring period, demonstrating persistence of the population through adverse climate fluctuations (drought cycles), and either stability or successful reproduction and growth (population expansion and spread) rather than progressive declines over a minimum 10 year period, which is likely to include at least one drought cycle. The proposed mitigation based solely on short-term (3 year) survival of transplants cannot offset significant impacts of destruction of the existing (CEQA baseline) population.

F.G-2 cont.

For any compensatory mitigation proposal based on translocation of rare *Brodiaea* californica subsp. *leptandra* to be potentially feasible and adequate for CEQA (reducing the severity of impact to less-than-significant), the following minimal criteria would need to be met:

- Scientific site-specific assessment of suitable receptor sites based on known ecology and reproductive biology of *Brodiaea californica* or ecologically similar species;
- Long-term population criteria for persistence, resilience, and reproductive success;
- Contingency measures to prevent local extirpation in case of population failure;
- Replication of founder colonies and net population increase of translocated founder population size (relative to original source population) to offset risk of mortality and colony failure associated with uncertainty of translocation and post-translocation climate, herbivory, and plant competition;
- Active vegetation management (potentially including localized or selective seasonally timed burning or burn pre-treatment of translocation sites; mowing, manual removal of weeds, herbivore exclosures) during the establishment phase of transplanted corms
- Monitoring of basic demographic variables (survivorship, flower production, viable seed production, population size) over at least one drought/high rainfall cycle
- Scientific peer review of translocation and monitoring plans by qualified plant ecologists with expertise in bulb/corm management in California grasslands, and

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review and approval of a mitigation agreement with the California Department of Fish and Game.

F.G-2 cont.

Peter Baye

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s.

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EXHIBIT K

NOWWE
7168 St. Helena Road
Santa Rosa, CA 95404

Subject: Review of Reports For
Cornell Winery
245 Wappo Road
Santa Rosa, CA 95404

References: RGH Consultants, Inc. Geotechnical Update (10-21-11)
Raymond Waldbaum Letter (2-1-11)
Raymond Waldbaum Letter (11-1-11)
Atterbury and Associates, Inc. (07-31-11 and 08-11-11)

Dear NOWWE:

INTRODUCTION

Per your request, I have reviewed the above referenced documents related to Cornell Winery on 245 Wappo Road in Santa Rosa, California. The purpose of this review is to evaluate the potential environmental effects of the proposed Cornell Winery project, located in Sonoma County.

PROFESSIONAL REVIEW

I have reviewed the Geotechnical Study Report Update concerning the proposed rainwater storage tanks by RGH, dated October 21, 2011. As pointed out by Waldbaum and Cotton, Shires and Associates, Inc. in their reviews, the RGH report presents no geologic map, no geologic cross sections, no laboratory test data and no stability analysis. It is therefore inconclusive concerning site stability.

F.K-1

The Update produced one continuous core boring which have been logged and samples tested from the site. Based on this data, the update report indicates that this area is similar to the winery site, however, no slope stability calculation was produced from the slopes.

With two documented landslides at the main winery site, and this update stating that the tank site is similar in geology to the main winery site, the site needs a slope stability calculation produced to determine if the site is suitable for construction. The slope stability calculation needs to be

based on adequate geologic investigation and laboratory test data to determine factors of safety against gross and surficial failures.

Also noted was a lack of moisture content description in the borehole log below the upper four feet. The moisture content is an essential element in assessing slope stability. If no data was obtained from the borehole in-regards to moisture content, a second borehole may be required to be drilled with moisture data recorded in order to calculate the slope stability of the site.

I have reviewed the Revised Storm Water Calculations and Storm Water BMP provided by Atterbury and Associates, Inc.

The design and calculations are designed for a 10 year storm event. No issues with the calculations were noted. Please note that these calculations are designed for a standard year and may not be adequate for drought years or excessive rain years.

F.K-1 cont.

Based on the Grading Plan Page C6, the Rain Harvest Tanks will sit upon a pad with a retaining wall located below the pad on the descending slope below. The Retaining wall varies from 11 feet in height to 15 feet in height. No diagram, retaining wall construction schematic, calculations, or discussion was identified for this large feature. The geotechincal report does not discuss the retaining wall, the back-fill material, the foundation requirements of the retaining wall, etc. Below the retaining wall is a descending slope, this increases the foundation requirements of the retaining wall. These plans should include a full discussion on the construction of the Retaining wall, is foundation and be reviewed and approved by the Geotechnical Engineer.

It has been a pleasure to be of service.

Sincerely,

Enviro Assess

James Robinson
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EXHIBIT L

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February 18, 2012

Ms. Kimberly Burr, Attorney at Law
P.O. Box 1246
Forestville, Ca. 95403

Subject: Review of "Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California" dated August 2006 by Todd Engineers, Emeryville, California and related Documents.

Dear Ms. Burr:

I have reviewed, as you directed, the information you forwarded to me. That information is as follows:

1- August 2006 Todd "Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California,

2- January 11, 2012 Waldbaum review of the Todd Report,

3- Response from Board for Professional Engineers, Land Surveyors, and Geologists following a citizen's complaint about the Todd Report

4- Sonoma County Permit and Resource Management Department *Policy and Procedure*, and

5- County of Sonoma, Permit and Management Department comments on RGH Geotechnical and Environmental Consultants (RGH) report concerning ground-water Availability at Cornell farms, LLC, dated July 15, 2004.

It should be noted that my understanding of my responsibility was not to determine if there is adequate ground water available to sustain the projected needs of the winery at Cornell Farms LLC, but to give an independent professional review to determine the completeness of the report and if the data presented in the report supports the conclusions. Also, I made a brief review of the Board's response to the citizen's complaint of the Todd report.

The County of Sonoma Permit and Resource Management Department (SCPRMD) reviewed a groundwater study for the Cornell Farms LLC, dated July 15, 2004 by RGH. SCPRMD concluded the site to be developed is considered either ZONE 3 (Marginal Groundwater Availability Area) or Zone 4 (Area with Low or Highly Variable Well Yield). The SCPRMD concluded "very specific and detailed set of investigative procedures must be completed to prove that water is available for the proposed project and that use of this water will not adversely affect neighboring water users and the environment." This referenced "very specific investigative procedures" was not done either by RGH or in the later supplemental study by Todd. Yet, SCPRMD granted a negative declaration for the project. SCPRMD thus violated its own guidelines.

It appears that both RGH and Todd depended upon data and information in the literature to define the geologic framework, on driller's reports to define the groundwater yield from wells, and upon "rules of thumb" to define the rate of groundwater recharge. None of the data or information used are reliable or substantiated by actual field data from the site area. No geologic mapping was performed and only references to a coarse-scaled geologic map was used. No independent determination of well yield was made nor a 3 or 4-day aquifer test performed. The total dependence on driller's logs and reports are, at best, a risky source of information.

F.L-1

As a Professional Engineer, Professional Geologist, and Certified Hydrogeologist with over 50 years experience, and considering the ramifications of my assessment, I would have spent several days in the field to conduct a 3-or 4- day aquifer test, collect water-level data, verify the geological map with exposures, and discuss groundwater conditions, well yields, dependability of wells with other well owners. The success of the winery is partially dependent upon an adequate source of good quality water. Yet, no one made any attempt to obtain hard, dependable and verifiable data to quantify and to determine the reliability of the source. Further, if I was the owner of the Cornell Farms, LLC, I would want to know if I could obtain a reliable and adequate supply of good-quality water before I spent several million dollars for improvements. Money saved at the time of the investigation by not performing an aquifer test would ultimately need to be spent to run a pumping test to select and size the pump and to design the pump placement in the well. Although these tests are for different purposes, a properly executed aquifer test will provide the needed information for pump selection and design.

One of the driller's reports that was relied upon by Todd stated that Well 210149a was pumped by air lift at 50 gpm for 0.5 hours and resulted in a drawdown of 56 feet. This high yield is contradictory to other well yields in the

area. Because of this and because of the questionable accuracy of the quantity of water withdrawn by airlift, very little credibility should be assigned to this information.

There are no water quality data presented in the Todd report as requested by SCPRMD. Thus, it is unknown if water quality is suitable for use by the proposed winery. It is possible that the water may have to be treated or imported (trucked in) for certain uses.

The Todd report goes through a series of calculations using evapotranspiration estimates, surface-water runoff information, and adjustment of area of Cornell Farms LLC properties in different watersheds to assess groundwater recharge rates. There is no discussion of the types and density of vegetation that is the controlling factor for evapotranspiration. The calculations, assumptions and basis are not well presented and explained and the reader is largely left to interpret the procedures and assumptions on his own. Further, at the end of all of this, the rate of groundwater recharge is not determined but seems to be plucked out of the air at 3 percent or 10 percent of the streamflow. There is no rationale given to prove and validate these values. The report basically states that 3 percent of the streamflow attributable to the Cornell Farms LLC land area is greater than the quantity of water needed. Therefore, the required yield can be sustained through onsite recharge from precipitation. It is implied that because the pumping can be sustained by on site recharge, there will be no negative impact to neighboring water users or the environment.

F.L-1 cont.

The Board of Professional Engineers, Land Surveyors, and Geologists responded in a letter dated December 27, 2011 to a Citizen's complaint about the Todd Report. The Board could find no evidence that the author of that report, Mr. Abbott, was negligent and/or incompetent. The Board did say that Mr. Abbott did not adequately address the heterogeneous conditions of the aquifer.

In summary, the Todd report does not address the deficiencies of the RGH report. A long-term (several days) aquifer test (as required by SCPRMD) was not conducted nor were water quality samples taken and analyzed. Further, the estimated recharge to the fractured rock aquifer is suspect without verification and documentation.

Sincerely,

The LeBaugh Group, Inc.

Dean O. Gregg, P.E., P.G., CHG

Vice President

Letter F. Law Offices of Stephan C. Volker - EIR Scoping Comments of New-Old Ways Wholistically Emerging (Stephan C. Volker, Attorney)

Introduction

As discussed in the Introduction to the responses to Letter E, Attachment 8 of Letter E consisted of the commenter's response to the Notice of Preparation (NOP), dated March 28, 2012, titled *EIR Scoping Comments of New-Old Ways Wholistically Emerging.* This letter and its Exhibits A through N are referred to in this Response to Comments Document as Comment Letter F, and Exhibits F.A through F.N, respectively.

All substantive comments raised in Comment Letter F, and Exhibits F.A, F.B, F.C, F.D, F.E, F.F, F.G, F.K and F.L are responded to in this Response to Comments Document. The copy of Comment Letter F, and Exhibits F.A, F.B, F.C, F.D, F.E, F.F, F.G, F.K and F.L are included preceding this response (excluding the appendices to Exhibits F.B and F.D which do not comment on the adequacy of the Draft EIR, and consequently, which are included in Appendix F as Exhibit F.B Appendix and Exhibit F.D Appendix, respectively, at the end of this Response to Comments Document. In addition, Exhibits F.H, F.I, F.J, F.M and F.N do not comment on adequacy of the Draft EIR, and consequently, are included in their entirety in Appendix F at the end of this Response to Comments Document).

In summary, all of the comments submitted by the commenter have been carefully considered and evaluated with respect to whether they present significant environmental points relevant to the proposed Project and the alternatives to the proposed Project considered in the Draft EIR. The table below provides a summary of letters and attachments, including a reference for how each letter component is referred to in the Response to Comments Document, a description of each letter component (author, description and date), and the status of each (e.g., previously submitted in response to the NOP).

TABLE F-1
SUMMARY OF COMMENT LETTER F

Letter Reference Used In Response to Comments Document	Submittal	Author	Description	Date	Status of Each Submittal
F	Letter	Stephan C. Volker	*EIR Scoping Comments of New-Old Ways Wholistically Emerging*	3/28/12	Response to NOP
F.A	Exhibit A	Raymond Waldbaum, PG, CEG	*Engineering Geologic Review of Proposed Stormwater, Domestic Waste and Process Waste Disposal, Cornell Wine Factory*	2/1/11	Response to NOP
F.B	Exhibit B	Raymond Waldbaum, PG, CEG	*Engineering Geologic Review of Report of Proposed Rainwater Tanks*	11/1/11	Response to NOP
F.C	Exhibit C	Raymond Waldbaum, PG, CEG	*Engineering Geologic Review of Preliminary Grading, Drainage, and Erosion Control Plan, Cornell Wine Factory*	11/8/11	Response to NOP

TABLE F-1 (Continued)
SUMMARY OF COMMENT LETTER F

Letter Reference Used In Response to Comments Document	Submittal	Author	Description	Date	Status of Each Submittal
F.D	Exhibit D	Raymond Waldbaum, PG, CEG	*Engineering Geologic Review of Supplemental Groundwater Availability Study for Cornell Farms LLC*	1/11/12	Response to NOP
F.E	Exhibit E	Avocet Research Associates, LLC	*Review of "Biological Resources Report for the Cornell Winery Project" Prepared by T.P. Winfield et al.*	1/27/12	Response to NOP
F.F	Exhibit F	Patrick Higgins, Consulting Fisheries Biologist	*Comments on the Impact of the Proposed Cornell Winery Project (Application UPE07-0008) to Mark West Creek Pacific Salmon Species and Critical Habitat*	1/12	Response to NOP
F.G	Exhibit G	Peter R. Baye, Coastal Ecologist, Botanist	*Biological Resources Report for the Cornell Winery Project – Assessment of Special Status Plant Species and Adequacy of Mitigation*	12/12/11	Response to NOP
F.H	Exhibit H	Unsigned	Memorandum on Fish Relocation	9/7/11	Response to NOP
F.I	Exhibit I	Unsigned	Memorandum of Snorkel Survey	9/7/11	Response to NOP
F.J	Exhibit J	Laura Waldbaum	Informational Timeline Regarding Fish Stranding in the North Fork	8/16/11	Response to NOP
F.K	Exhibit K	Enviro Assess	*Review of Reports for Cornell Winery*	2/11/12	Response to NOP
F.L	Exhibit L	The Lebaugh Group, Inc.	*Review of "Supplemental Groundwater Availability Study for Cornell Farms LLC" and Related Documents*	2/18/12	Response to NOP
F.M	Exhibit M	Laura Waldbaum	Note regarding water delivery	12/5/11	Response to NOP
F.N	Exhibit N	Cotton, Shires and Associates, Inc.	Geologic and Geotechnical Peer Review, Proposed Storm Water Storage Tanks, Cornell Winery	11/9/11	Response to NOP

Responses to Letter F

F-1 This comment reviews the degraded condition of Upper Mark West Creek and states that the EIR should examine the cumulative effects that have resulted in this degradation. The Draft EIR addresses all potential cumulative impacts to Upper Mark West Creek; please see Impacts C.6 and D.12 in the Draft EIR. Please see also response to Comment E-29, and Master Response CUM-1 in Chapter II of this Response to Comments Document.

F-2 The commenter indicates there are six overarching deficiencies in past analyses of the Project's hydrological impacts that must be remedied in the EIR. For the first issue, please see responses F-3 to F-6, below. For the second issue, please see responses F-7 through F-10, below. For the third issue, please see response F-11, below. For the fourth issue, please see response F-12 though F-28. For the fifth issue, please see responses F-29 through F-33. For the sixth issue, please response F-34 through F-35.

F-3 to F-6 The commenter indicates some prior documents (e.g., the 2010 Initial Study/ Mitigated Negative Declaration) have omitted the vineyard's water use when calculating the Project's water use, that these two water sources are closely related aspects of the same overall

project, and that an improper segmentation of the Project is not permitted by CEQA. The commenter gives three reasons why the vineyard must be included, including: 1) it is unlikely that the winery would be constructed without the adjacent vineyard; 2) the winery's process wastewater would be disposed of in the vineyard; and 3) the Project applicant had planned to construct a winery since at least 2002, before the adjacent vineyard was created.

The commenter is incorrect. The Draft EIR acknowledges the relationship of the proposed Project and existing Cornell Farms vineyards, including land ownership, proximity, proposed use by the winery of wine grapes grown on the Cornell Farms vineyards, common facilities that would used by both operations (e.g., production well), and the benefits the existing Cornell Farms vineyards would receive from the proposed water reduction measures proposed by the Project (i.e., harvested rainwater and treated winery process water to supplement vineyard irrigation). The Draft EIR also describes existing groundwater use and irrigation methods of the Cornell Farms vineyards for informational purposes; see also page IV.C-11.

However, the existing Cornell Farms vineyards are not part of the proposed Project, and will continue to exist with or without the proposed winery. As stated on page III-10 of the Draft EIR, the existing Cornell Farms vineyards and its maintenance currently operate under a separate permit from the proposed Project. The Draft EIR discusses the specific discretionary approvals required from the County for the Project that are separate and distinct from the existing vineyard operations, including a Use Permit for the winery operations, and grading and building permits for the winery construction. The Draft EIR similarly notes that additional approvals would be required for the Project from a number of other regulatory agencies for construction and operation, including the State Department of Fish and Game, State Department of Conservation, Regional Water Quality Control Board, and the U.S. Fish and Wildlife Service; these approvals would also be separate and distinct from any regulatory approvals for the existing vineyards.

Nevertheless, as appropriate, the Cornell Farms vineyards water impacts are considered in the cumulative context in the Draft EIR, along with other past, present and reasonably foreseeable future cumulative development.

The commenter also incorrectly reasons in Comment F-4 that since the 2010 IS/MND concluded the winery project would not be inconsistent with the Sonoma County General Plan because the wine produced onsite would be produced from grapes from the adjacent vineyard, that permitting the winery without the vineyard would then violate the Sonoma County General Plan. The 2010 IS/MND was merely pointing out that the winery project was consistent with Goal AR-5 of the Sonoma County General Plan (i.e., 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).

F-7 The commenter indicates the proposed rainwater storage tanks are inadequate for mitigating the vineyard's water use. The commenter adds that the storage tanks may themselves have significant environmental impacts. The commenter is referred to responses to Comments F-8 through F-10, below.

F-8 The commenter asserts that the Project landscaping water demand is unknown. The commenter is referred to the Draft EIR (page IV.C-27) which estimates Project landscaping water demand under both Interim Project conditions (when winery landscaping vegetation is being established), and Long-Term Project conditions (when on-going irrigation of the winery landscaping would be required).

The commenter indicates the Project landscaping water use must account for the seasonal variability of rainfall. The commenter is referred to responses to Comment E-12 and E-13 which describes the conservative assumptions that are used in the Draft EIR to estimate Project landscaping water demand, including accounting for higher landscape water demand in warm, dry years.

The commenter indicates the 140,000-gallon capacity rainwater system would take 33.52 inches of rain to fill assuming a rainfall harvest area of 6,700 square feet, but that in some dry years past, recorded rainfall has only been 17.98 inches. The commenter underestimates the proposed Project rainwater harvest collection area, which is 23,250 square feet (not 6,700 square feet), as stated on page IV.C-25 of the Draft EIR. As discussed on page IV.C-27 of the Draft EIR, with this proposed rainwater harvesting collection area, the minimum amount of annual rainfall necessary to fill the rainwater 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 (drought year of 1976), and less than the recorded rainfall estimate of 17.98 inches quoted by the commenter. Consequently, the proposed rainwater harvesting collection area would collect more than enough water the fill the rainwater tanks annually, even in drought conditions.

The commenter inquires whether additional groundwater would be pumped to satisfy landscaping needs if the stored rainwater is exhausted. The commenter states that the Project's total water use, including landscaping, must be disclosed in the EIR, and the sources for each use of water determined. The commenter is referred to Impact C.3 in the Draft EIR which addresses all Project water demands, including groundwater demand for winery operations, including for winery processing and domestic water purposes, as well as winery landscaping. Impact C.3 also addresses the proposed use of harvested rainwater, which would be used to irrigate winery landscaping (both under Interim and Long-term conditions), and to provide supplemental water for irrigation of the Cornell Farms vineyards; and also addresses use of treated process water as supplemental water for irrigation of the Cornell Farms vineyards. As Impact C.3 demonstrates, 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, there would be a reduction in the existing annual groundwater pumped at Cornell Farms, including during the critical dry season months of August through October.

F-9 The commenter references the Project applicant's biological resources report and indicates the proposed rainwater harvesting system is only designed to contain the runoff "from the 85th percentile 24-hour storm event," and then claims that the harvesting system would be overwhelmed during the 15% of storms that have the highest rainfall and thereby pose the greatest risk of causing erosion and slope failure.

As described in the Draft EIR, page IV.C-16, the Project is located within the boundary of Phase I MS4 permits administered by the North Coast Regional Water Quality Control Board via the National Pollutant Discharge Elimination System (NPDES) permit. Accordingly, the stormwater system would be designed pursuant to 85th percentile 24-hour storm, as required by the MS4 permit.

As described in the Project applicant's biological resources report, as well as on page III-19 of the Draft EIR, the proposed rainwater harvesting system would include a bypass pipe for storm events larger than the 85th percentile 24-hour storm. This bypass pipe would appropriately route any excess water into a vegetated rock diffuser (consisting of perforated pipe within a rock rip-rap gallery) that would disperse and distribute flow in an area approved by the Project geotechnical engineer. As discussed in Impact C.1 in the Draft EIR, the proposed rainwater harvesting and stormwater systems would be designed to meet all applicable Construction General Permit and County standards. These regulatory controls would reduce and manage erosion, control stormwater runoff, and reduce sediment delivery during Project operation. 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.

F-10 The commenter asserts the Project applicant's biological resources report relies upon rainwater harvesting to mitigate the vineyard's water use at the same time it relies upon the harvested rainwater as a source of landscaping water.

Please note the biological resources report does not state that the proposed rainwater harvesting is being used to "mitigate the vineyard's water use" as the commenter claims; the existing Cornell Farms vineyards are not part of this Project and as a result, do not require mitigation as part of this Project (see also responses to Comments F-3 to F-6, above). Rather, the Project applicant's biological resources report indicates the rainwater harvesting would provide supplemental vineyard irrigation water, which would reduce the volume of vineyard irrigation water that would need to be obtained from the existing well at 420 Wappo Road.

The commenter indicates the Project's proposed harvested rainwater cannot be used for both Project landscaping and for the vineyards, and that the EIR must analyze and mitigate the environmental impacts of additional groundwater pumping during the years that harvested rainwater would be used for landscaping. The Project proposes to harvest a sufficient volume of rainwater, which, in combination with the proposed use of treated winery process water, would provide sufficient water for Project landscaping and to

supplement the irrigation of the Cornell Farms vineyards; please refer to response to Comment F-8, above.

F-11 The commenter quotes the Project applicant's biological resource report discussion of water savings that would be provided by a conservation easement on the 100 Wappo Road property. The commenter provides a number of reasons why the commenter believes a proposed conservation easement would not mitigate the Project's water use.

However, subsequent to the completion of the Project applicant's biological resource report, and prior to publication of the NOP, the Project applicant removed from its proposed Project the proposal for a water conservation easement on the 100 Wappo Road property (as indicated on page III-9 of the Draft EIR). Since there is currently no conservation easement proposed as part of the Project, the comments raised by the commenter are not applicable to the Project as currently proposed, and no response is required.

The commenter should note, however, that the Draft EIR Alternatives section includes a Project Alternative that would place a Conservation Easement similar to that previously described for the project on the Cornell Farms 100 Wappo Road property and/or the adjacent 115 Wappo Road property (Alternative 2B). As discussed in the Draft EIR, Alternative 2B would provide substantial environmental benefits, including further reducing potential hydrological effects of the Project.

F-12 The commenter comments on the applicant's biological resources report, and claims the volume of groundwater needed for Project dry season and winter pumping has not been disclosed and the resultant environmental impacts have not been discussed. The Draft EIR provides the proposed groundwater pumping schedule for the Project, including proposed groundwater use by month, in Impact C.3, and describes all associated potential groundwater impacts in Impact C.3, C.4 and C.6.

F-13 The commenter comments on the applicant's biological resources report, indicating that it relies on the applicant's 2006 groundwater availability study. The commenter asserts that the 2006 study relies upon regional geologic maps, and that no geologic mapping was performed, and no independent determination of well yield was made.

Please see Master Response HYD-1 in Chapter II in this Response to Comments Document.

F-14 The commenter asserts that the applicant's 2006 groundwater availability study was deficient because it measured the flow in Mark West Creek at a USGS gauging station located 17 miles from the Project site, indicating that tributaries near the Project site have lower flows than measured at the USGS station, and that the potential exists for the Project to result in an adverse reduction in creek summer base flow, and significant impacts to creek ecology within and downstream of the confluence of the North and South watersheds.

Please see Master Response HYD-1 in Chapter II in this Response to Comments Document.

F-15 The commenter asserts the applicant's 2006 groundwater availability study conclusion, that groundwater pumping would not have any impacts upon Mark West Creek, is mistaken.

The Draft EIR Impact C.4 addressed the potential effects of Project groundwater pumping on other supply wells in the area. As discussed in Impact C.4, the applicant's 2006 groundwater availability study estimated the maximum estimated radius of influence of the Project supply well, when pumped for 15 gpm for 18 hours a day, would be 323 feet. However, under the Project, all groundwater pumping (for both the vineyards and winery) would be conducted at the current rate of 10 gpm. Furthermore, the proposed average daily pumping duration of the Project supply well to serve the winery (a total of 22 to 109 minutes daily) would be at a considerably shorter duration than the pumping duration considered in the worst-case pumping scenario (i.e., 18 hours per day). Consequently, the maximum estimated radius of influence estimated in the applicant's 2006 groundwater availability study is considered highly conservative in evaluating the potential impact of the groundwater pumping for the winery by itself, and in combination with the pumping for Cornell Farms vineyards. It should be noted the actual estimated radius of influence associated with just the groundwater pumping for the winery in its peak month would be 92 feet.

The analysis in the Draft EIR demonstrates that the proposed pumping rates would not draw down groundwater surface levels such that nearby wells would be adversely affected, and would not cause a radius of pumping influence that would intersect or otherwise draw water away from local surface water sources. Accordingly, Impact C.4 is found to be less than significant.

F-16 The commenter makes a general statement that the applicant's 2006 groundwater availability study contains methodological problems and lacks crucial data. The commenter is referred to responses to Comments F-2 to F-15, above.

F-17 The commenter asserts that methodological deficiencies and lack of data used in the applicant's 2006 groundwater availability study are exacerbated by an improper utilization of a short-term airlift test rather than a constant rate aquifer test.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

F-18 The commenter asserts that the applicant's groundwater availability study use of the wrong pump test renders its opinion of limited value when ascertaining long-term environmental impacts and groundwater availability. The commenter adds that unless a constant rate aquifer test is completed, the water availability of the site is unknown.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

F-19 The commenter asserts that the County refused to require a constant rate aquifer test because it would be too expensive, which the commenter indicates has no bearing on whether doing so is required under CEQA. The commenter also asserts that the County indicated it is not required because of the conservation easement would offset the winery water use, which the commenter disagrees with.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

F-20 The commenter asserts that the applicant's groundwater availability study's conclusion that an airlift test was sufficient has no scientific basis and therefore is not substantial evidence, and that the EIR must include the result of a constant rate aquifer test.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

F-21 The commenter asserts that there has been no demonstration that the Project has a reliable water supply and an inadequate short-term airlift test was conducted in lieu of a constant rate aquifer test, and that the Project does not respond to items 9-12 and 13-17 of the County's Groundwater Checklist.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

F-22 The commenter asserts the Project fails to comply with the Sonoma County General Plan WR-2e, as it requires proof of groundwater availability in water-scarce areas like the Project vicinity.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

F-23 The commenter comments on the applicant's biological resources report regarding statements made in that report about the Project reduction in well pumping during dry months.

As demonstrated in Impact C.3 in the Draft EIR, 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 would result in a net reduction in annual groundwater pumping under Project conditions, and consequently, reduce the annual demand on the aquifer. Furthermore, the proposed winery would limit its proposed pumping of the Project 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. 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 groundwater pumping would not reduce streamflow in Mark West Creek.

F-24 to F-28 The commenter indicates groundwater inflow is crucial to the success of steelhead, which require cool water; and that the temperature difference in pools measured by the California Department of Fish and Game (CDFG) was due to the infiltration of cool water into Mark West Creek from subsurface flows. The commenter also indicates that the development of groundwater at even a great distance from surface water can reduce the amount of groundwater inflow to surface water, and that excessive development is in danger of changing the North Fork from a gaining stream to a losing stream, which has profound ecological implications, including the loss of critical habitat for coho salmon and steelhead trout. The commenter adds that the link between pumping and lower flows is demonstrated by decreases in water observed by CDFG staff, and that pumping groundwater near streams can cause dewatering, even in wet years. The commenter also adds that winter extraction of groundwater can lower summer surface water levels. The commenter closes by indicating a constant rate aquifer must be conducted.

The commenter is referred to response to Comment F.F-7, below.

F-29 The commenter indicates that the runoff generated by the Project would have significant environmental impacts. The commenter asserts that the amount of runoff that the Project will generate has not been accurately quantified, referring to a Storm Water Calculations report prepared by the applicant's engineer that the commenter claims underestimated rainfall.

The Draft EIR did not use or cite the report identified by the commenter. However, please see response to Comment E-25 with respect to how the Draft EIR addresses Project stormwater effects and regulatory requirements to which the Project would be subject to ensure Project effects on stormwater runoff would be less than significant.

F-30 The commenter indicates the Project may substantially modify the site's drainage pattern, and is likely to increase the delivery of sediment to Mark West Creek.

As discussed on page IV.C-20 in the Draft EIR, the proposed winery buildings, wine cave, domestic water tank and winery process wastewater treatment facilities, rainwater harvesting tank pad and parking area and leach field are not located within existing drainages on the Project site.

Furthermore as discussed in response to Comment E-25, the regulatory requirements described the Project would be subject to, along with the stormwater collection and control features proposed as part of the Project and identified in mitigation in the Draft

EIR, would ensure stormwater runoff effects of the proposed Project, including potential stormwater runoff volumes increases and potential increases in erosion and sediment delivery, would be less than significant.

F-31 The commenter asserts that the Project's potential to modify the drainage of the site such that a significant portion of the Project's runoff would flow into the freshwater pond at 100 Wappo Road would likely cause numerous significant environmental impacts, such as from oil, grease, and sediment.

As discussed in response to Comment F-30, above, the Project would not alter existing drainage patterns. With respect to claims that the Project would increase contamination from oil, grease, and sediment carried off-site, including into the freshwater pond at 100 Wappo Road, please see response to Comment E-25.

F-31A The commenter states that the Draft EIR must address impacts from the increase of "treated" runoff to native species, and references Exhibit F (Comment Letter F.F in this Response to Comments Document) which specifically refers to foothill yellow-legged frog (*Rana boylii*) (FYLF), California red-legged frog (*Rana draytonii*) (CRLF) and western pond turtle (*Emys marmorata*), inhabiting the freshwater pond located at 100 Wappo Road.

With respect to claims that the Project would increase treated stormwater flow off-site, including into the freshwater pond at 100 Wappo Road, please see response to Comment E-25. Furthermore, as discussed in the Draft EIR on page IV.D-17 and page IV.D-19, neither CRLF nor western pond turtleare present on the Project site. In addition, the freshwater pond does not provide suitable habitat for the FYLF.

F-32 The commenter claims that the applicant has failed to demonstrate the effectiveness of proposed erosion control measures, indicating nearby stream channels cross easily eroded soils.

Please refer to response to Comment E-25, above.

F-33 The commenter asserts that the proposed rain gardens and vegetated buffers may themselves cause significant impacts.

Please see response to Comment E-26.

F-34 The commenter claims the Draft EIR's analysis of process wastewater disposal is deficient. Specifically, the commenter asserts that since uphill pumping of the process wastewater would occur, the possibility of pump failure should be addressed. Please see response to Comment E-27.

The commenter also asserts the environmental impacts of the physical construction of the pipeline are unknown. Please see response to Comment E-54.

F-35 The comment states that groundwater contamination could result from simultaneous irrigation with well water and processed wastewater as groundwater pumping draws wastewater into the aquifer. The comment also asserts that increased subsurface flow from irrigation could destabilize slopes below the vineyard and that the Draft EIR must include the results of a geological assessment of those slopes.

The use of winery process wastewater would not cause or contribute to groundwater contamination because the process wastewater would be treated before being used on the vineyard. The process wastewater would be clarified and treated in conformance with Regional Water Quality Control Board (RWQCB) standards. RWQCB standards are discussed in the Draft EIR on page IV.C-16 and details of the winery wastewater treatment are discussed on page III-19. Winery process wastewater would be collected and pumped to a fully enclosed aerobic package treatment plant where it would undergo pretreatment, solids separation, and pH control before being conveyed for treatment using an equalization and sludge digestion tank and aeration basin. Following treatment, the treated process water would be stored in an enclosed water tank with a capacity of approximately 46,000 gallons, and then pumped through a filter and conveyed to the Cornell Farms vineyards irrigation system. The treated process water would be used for irrigation of the vineyard in combination with groundwater and thus would be further diluted within the near surface soils. The fraction of irrigation water not taken up by the vines or lost through evapotranspiration would receive additional treatment as it percolates through the soils and bedrock. The process wastewater would therefore not adversely affect the quality of groundwater.

As discussed in the Draft EIR, page IV.C-11, the irrigation system at the Cornell Farms vineyards is designed to provide the optimum amount of water required for the desired grape quality without under- or over-watering. This system requires considerably less frequent watering and less water use compared to typical mountain vineyards. The vineyards have been operating for several years and have not experienced slope instability due to irrigation. Furthermore, the proposed Project would not alter the irrigation schedules or volumes, increase vineyard size, or otherwise affect the down slope areas. Destabilizing the vineyard slopes, therefore, is not considered an impact of the Project and further geological evaluation is unwarranted.

F-36 The commenter asserts that prior analysis of the Project's biological impacts is deficient in five respects. With respect to the first issue, please see Master Responses BIO-1 through BIO-3 in Chapter II in this Response to Comments Document. With respect to the second issue, please see Master Response BIO-6. With respect to the third issue, please see Master Response BIO-4. With respect to the fourth issue, please see responses to Comment E-49 through E-54, below. With respect to the fifth issue, please see Master Responses BIO-3, BIO-5 and BIO-6.

F-37 The commenter asserts that the Project applicant's biological resources report was limited and not comprehensive. Specifically, the commenter asserts that the seasonal timing of surveys was inappropriate; systematic mammal surveys were not conducted, including

for bats; and nesting bird surveys were improperly timed. The commenter indicates that additional surveys must be conducted during other times of year to ensure the EIR contains a complete profile of the species present on-site.

Please see Master Responses BIO-1, BIO-3 and BIO-5 in Chapter II of this Response to Comments Document.

F-38 The commenter asserts that the Project applicant's biological resources report conducted avian surveys at the wrong time of year and wrong time of day, and that further surveys are necessary.

Please see Master Response BIO-3 in Chapter II of this Response to Comments Document.

F-39 The commenter asserts that the Project applicant's biological resources report's selection of buffer zones for evaluating impacts to nesting birds are inadequate, especially for raptor and large passerines.

Please see Master Response BIO-3 in Chapter II of this Response to Comments Document.

F-40 The commenter asserts that the Project applicant's biological resources report's conclusions about species present on-site are unreliable and incomplete; a list of 12 special-status bird species was overlooked; and that additional biological resource inventories must be conducted to allow the EIR to include and accurate and reliable assessment of the Project's biological impacts.

Please see Master Responses BIO-1, BIO-2 and BIO-3 in Chapter II of this Response to Comments Document.

F-41 The commenter asserts that the Project applicant's biological resources report improperly analyzed the Project's impact to the narrow-anthered California brodiaea. The commenter indicates some of the brodiaea corms and seeds were removed from the Project site in anticipation of transplantation upon Project approval, and that transplantation is risky and was unsupportable legally. The commenter also asserts that the baseline for purposes of environmental review should be 2009.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

F-42 The commenter asserts that pre-emptive removal of narrow-anthered California brodiaea corms and seeds was improper because it constitutes an unlawful pre-approval of the Project.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

F-43 The commenter asserts that there is no scientific basis for the Project proponent's view that transplantation is an effective means of mitigating impacts to the narrow-anthered California brodiaea, and that transplantation is risky and ineffective.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

F-44 The commenter asserts that the Project applicant's biological resource report used an obsolete 1992 protocol for surveys of northern spotted owl (NSO), rather than the appropriate updated protocol, adopted by the USFWS in 2011. The commenter also asserts that outdated guidelines were used to evaluate the noise disturbance that the Project may cause to NSO, using 1996 rather than 2006 guidelines. The commenter adds that additional studies must be conducted for NSO pursuant to the correct protocols to ensure their reliability.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F-45 The commenter asserts that the Project applicant's biological resource report used an incorrect buffer zone to determine the Project's impact on NSO. The commenter indicates the correct buffer zone is 1.3 miles, and that the locations and status of each NSO within a 1.3-mile radius of the Project be evaluated during each year of construction.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F-46 The commenter asserts that there has been no attempt for the Project applicant's biological resource report to ascertain the extent to which nearby NSO venture on-site to prey on the dusky-footed woodrat.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F-46A The commenter asserts that the Project applicant's biological resource report's assessment of noise impacts on NSO is deficient.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F-47 The commenter asserts that the Draft EIR must remedy the Project applicant's biological resource report's deficiencies and disclose, analyze, and mitigate all of the Project's impacts upon the NSO.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F-48 This comment reviews the status of coho salmon and steelhead trout in Mark West Creek, and states that the Project's "potentially disastrous impacts on these critical species have never been substantively analyzed" and that they must be now.

The Draft EIR examines Project and cumulative impacts to coho salmon and steelhead trout in Section IV.D, Biological Resources; please see Impacts D.6 and D.12; see also the responses to Comments F-49 through F-52, below.

F-49 The comment asserts that the Project would increase erosion and sedimentation of Mark West Creek, and degrade salmonid habitat.

The Draft EIR examines in detail the potential for the Project to result in increased sedimentation and reduced streamflows in Upper Mark West Creek (Impacts B.4, C.1, C.3, C.4, C.5, and C.6) and the resulting potential for impacts to biological resources (Impact D.6 and D.12). Based on substantial evidence and careful analysis of the effectiveness and consequences of the specific water use and erosion control aspects of the Project, however, the Draft EIR concludes that the impacts would be less than significant (please note that Impacts B.4, D.6 and D.12 would be less than significant with the application of identified mitigation measures). Because the Project is not expected to reduce streamflow, including dry season baseflow, and is not expected to increase sedimentation in Upper Mark West Creek, the Project is not expected to result in an increase in stream temperature. The EIR preparers thoroughly examined all scoping comments and supporting documentation, and carefully considered these central environmental issues.

F-50 The commenter asserts that Project impacts, including reduced streamflow and increased sedimentation, would be exacerbated because of regional, cumulative impacts on stream conditions

Regarding cumulative impacts to Mark West Creek, please see the responses to Comments B-9, E-29, and Master Response CUM-1 in Chapter II of this Response to Comments Document.

F-51 The commenter asserts that Project impacts on water quality and aquatic wildlife would be amplified by the existing ponds on the Cornell Farms property.

The Project is not proposing to alter the configuration or use of the existing ponds on the property. Any effects of these ponds on water quality are considered a part of baseline conditions, and also considered to be contributing to the existing cumulative impacts from past development discussed in Impacts C.6 and D.12. Please see also Master Response CUM-1 in Chapter II of this Response to Comments Document.

F-52 The comment asserts that the Project's sedimentation impacts would combine with sedimentation from the numerous existing roads in the Project vicinity. Please see response to Comment E-42.

F-53 The commenter asserts the EIR must consider that global climate change would exacerbate the Project's impacts, including increased water scarcity and more variable weather patterns. As discussed in Chapter I, Introduction in the Draft EIR, the Draft EIR analyses are based on conservative assumptions that provide worst-case Project impacts, in accordance with current State, County and other applicable agency CEQA Guidelines and professional standards. This includes consideration of Project water demands and effects during low rainfall years that could be attributable to in part to climate change. The Draft EIR also addresses the Project's generation of greenhouse gases, which can contribute to global climate change.

F-54 The commenter makes a general statement that the Project would jeopardize the continued existence of listed salmonids and that the EIR must disclose, analyze and mitigate this impact, or the Project must be disapproved. The commenter is referred to responses to Comments F-48 through F-53, above.

F-55 The commenter provides an introductory comment that the Project site has not been demonstrated to be geotechnically feasible for development of the Project, indicated detailed geologic mapping has not been conducted, and no large diameter borings have been drilled; and that there are widespread deficiencies with the geotechnical analysis, as discussed in the commenter's following comments. The commenter is referred to responses to Comment F-56 through F-63, below.

F-56 The commenter asserts that the applicants' 2010 geotechnical report prepared by RGH Consultants (RGH) is inadequate and that additional comprehensive geotechnical analyses are required. The commenter asserts that detailed subsurface investigation of landslide scarps and landslide masses has not occurred. The commenter also claims that the RGH report ignored the possibility that the landslides will enlarge in an upslope direction. The commenter asserts that large-diameter borings are needed but were not presented in the RGH report. The commenter claims the RGH report has not completed a comprehensive slope stability analysis. The commenter also asserts that landslides and sedimentation would directly degrade habitat of fish and wildlife.

Please see Master Response GEO-1 in Chapter II of this Response to Comments Document.

F-57 The comment implies that the County's geotechnical consultant, Cotton Shires Associates (CSA), in conducting its peer review of the 2010 RGH Geotechnical Study[21] (2010 RGH Study), incorrectly concluded that additional slope stability studies of the site were unwarranted. The comment states that there is no evidence to support the conclusion of stability and it is likely that the Project site would be affected by strong ground shaking. The comment also states that CSA's geologic mapping must be made available for expert assessment and public review.

[21] RGH Consultants, 2010, *Geotechnical Study Report, Cornell Winery, 245 Wappo Road, Santa Rosa, California.* June 23.

Please refer to Master Response GEO-1 in Chapter II of this Response to Comments Document which addresses the adequacy of the slope stability analysis of the proposed winery building site and Master Response GEO-2 that addresses the stability of the rainwater harvesting tank site.

On behalf of the County, CSA peer reviewed the 2010 RGH study for technical adequacy and provided its comments to the County in a letter dated July 2, 2010. In its review, CSA utilized the California Geological Survey Special Publications 117a[22] and associated implementation documents as guidelines to determine the level of investigation and analysis that should be performed to meet the standard of practice for evaluation of slope stability and potential landslide hazards. Special Publication 117a contains provisions that allow sites with favorable geologic conditions and low seismic hazards to be screened out of comprehensive quantitative evaluation requirements.

Based on the investigative work completed by RGH, CSA concluded that a comprehensive quantitative slope stability analysis was not necessary to demonstrate the geotechnical suitability of the proposed building site. While the Cornell Farms property does contain active, dormant, and ancient landslides, these features would not impact the building site. No evidence was presented in the studies reviewed for the Draft EIR that support the commenter's claim that the proposed winery buildings site and water tank sites are not geologically stable and are therefore not suitable for the proposed development. CSA and the Draft EIR acknowledge that earthquakes would likely occur and cause ground shaking at the Project site sometime during the operational life of the winery. However, given the predicted peak ground accelerations determined by the PSHA (see the Draft EIR, pages IV.B-14 and B-20 and response to Comment E-55) the proposed Project facilities would remain stable because of the underlying competent sandstone bedrock and seismic design requirements prescribed by the 2010 California Building Code. Finally, CSA did not include any mapping as part of their formal review letter; however, CSA's review did not reference any mapping conducted by them, and all of CSA's comments contained their letter were carefully considered.

F-58 The commenter claims the October 21, 2011 geotechnical report prepared by the applicant's geotechnical consultant lacks critical data; did not include a geologic map or any geologic cross sections; and did not provide a description of the aerial photograph interpretation or a photogeologic map showing that interpretation. The commenter also asserts that no laboratory test data or stability analysis resulting from that data was included in the geotechnical report. The commenter also indicates that the soil underneath the tank site is not stable or strong, but instead is soft, closely fractured and weak, and of the same type of material that previously failed, forming landslides throughout the site. The commenter asserts the geotechnical report omits data critical to the understanding of the tank site's stability.

22 California Geological Survey (CGS), *Guidelines for Evaluating and Mitigating Seismic Hazards in California,* Special Publication 117A, 2008.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

F-59 The commenter asserts that the leach field may be geotechnically unstable. The commenter asserts that past landslides in the area have been triggered by improperly sited leach fields. The commenter claims that the leach field site is underlain by landslides, and is located above steep and unstable slopes. The commenter also asserts that the site appears topographically indistinguishable from the septic drainfield at the 245 Wappo Road residence whose improper location caused as massive landslide. The commenter indicates that these factors combine to underscore the leach field's potential to trigger a landslide or debris flow and impact water quality and fish habitat.

Please see Master Response GEO-3 in Chapter II of this Response to Comments Document.

F-60 The commenter asserts that the proposed 3,000-foot pipeline associated with the leach field has the potential to cause significant environmental impacts. The commenter indicates that the construction would necessitate exporting excavated material and importing backfill material. The Draft EIR assumed some import of controlled density fill (CDF) for the pipeline installation; the commenter is also referred to response to Comment E-58 for a discussion of estimated truck trips related to soil removal associated with pipeline installation.

The commenter also asserts that no measures have been disclosed to control dust and erosion during pipeline construction, and that the backfilled materials could be a source of sediment to Mark West Creek and its tributary. The commenter is referred to response to Commenter E-54.

F-61 The commenter indicates there has been no discussion of the environmental consequences if the domestic wastewater pump lift were to fail. Please see response to Comment E-27 with respect to practices that would be taken in the event of a pump lift failure.

The commenter also indicates there has been no discussion of the risks or consequences of potential rupture of the domestic wastewater pipeline. As described in response to Comment E-54, the domestic wastewater pipeline would be installed using standard construction techniques and practices to ensure the pipeline would be properly installed and supported, and consequently, the potential for a pipeline rupture would be low. In any case, in the event a pipeline rupture occurred, as described in response to Comment E-27, the domestic wastewater conveyance system would incorporate appropriate features such that the system could be temporarily taken off-line until the appropriate repair was made.

F-62 The commenter asserts that the EIR must provide information about the leach field's potential water quality impacts. The commenter also indicates that nearby wells may

draw effluent from the leach field. Please see Master Response GEO-3 in Chapter II of this Response to Comments Document.

In addition, the commenter indicates a sewage spill is possible due to a lift pump failures. Please see response to Comment E-27.

F-63 The commenter asserts the Project poses substantial seismic risks; that the site would be affected by strong seismic groundshaking from a nearby fault. The Draft EIR, Impact B.1 addressed the potential for people or structures on-site to be exposed to the effects of seismic groundshaking in the event of a major earthquake.

As discussed on page IV.B-19 of the Draft EIR, 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 Earthquake Fault Zone and available published information regarding the age and activity of the faults suggest that recent displacement has not occurred. The Draft correctly notes in Impact B.1 that with the application of current seismic design criteria required under the California Building Code 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.

The commenter also asserts that the proposed use of side hill fills have a tendency to fail during seismic activity. The commenter is referred to response to Comment E-55.

F-64 The commenter indicates the truck trips for excavation of soil should include a soil swell factor. Please see response to Comment E-58 and Errata in this Response to Comments Document for consideration of a soil swell factor in estimation of construction truck trips.

The commenter asserts the Project would have air quality impacts. All potential air quality impacts associated with excavation and transport of soil were addressed in the Air Quality sub-section of IV.A, Summary of the Initial Study in the Draft EIR, and revised in this Response to Comments Document (see Errata), and determined to be less than significant. Please also note that as a condition of approval, the County would require dust control measures be included as part of the Project to ensure effects of generation of dust during construction to ensure these effects would remain less than significant.

The commenter asserts that Project trucks on St. Helena Road would endanger oncoming vehicular traffic, bicyclists and pedestrians. Potential impacts associated with Project construction truck traffic on traffic flow and safety were addressed in the Transportation and Traffic sub-section of IV.A, Summary of the Initial Study in the Draft EIR, and revised in this Response to Comments Document (see Errata), and determined to be less than significant. Please note that as a condition of approval, the County would require transportation of excavation materials and construction equipment and supplies shall occur during off-peak traffic hours. See also responses to Comment E-59 and E-60.

The commenter asserts that the Draft EIR must address the Project effect of construction truck traffic on roadwear. Potential impacts associated with Project construction truck traffic on roadwear were addressed in the Transportation and Traffic sub-section of IV.A, Summary of the Initial Study in the Draft EIR, and determined to be less than significant. The commenter is also referred to response to Comment E-59.

F-65 The commenter asserts that, throughout the environmental review process, impact analysis and identification of mitigation measures have been postponed until after project approval.

The commenter provides two examples. One was for stormwater runoff/erosion; these comments are addressed below. Another example was for special-status roosting bats/nesting birds; please see Master Responses BIO-3 and BIO-5 in Chapter II of this Response to Comments Document for a response to comments made on this issue.

In Comments E-26 and F-65, the commenter indicates that the Draft EIR defers formulation of mitigation measures that will be used to control runoff until after Project approval.

The Project applicant's geotechnical engineer (RGH Consulting, Inc.) identified potential effects of surface water runoff from upgradient slopes, including erosion, and provided a number of recommendations in their geotechnical study report to address these effects. Impact B.4 in the Draft EIR Geology, Soils and Seismicity section reported these concerns, and the recommendations identified by applicant's geotechnical engineer served as the basis for Mitigation Measure B.4. The commenter cites an excerpt from Mitigation Measure B.4 from the Draft EIR; this mitigation measure is presented here in full:

> **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.

Mitigation Measure B.4 provides commonly used and technically feasible design improvements for reducing erosion effects. Mitigation Measure B.4 acknowledges that final Project design plans are not complete at this time, and as such, specifies the erosion controls identified in the measure shall be included in the final Project design plans and the controls shall be implemented as part of the Project.

Furthermore, the Draft EIR does not rely solely on this measure for ensuring erosion/sedimentation effects would be less than significant. Impact B.4 and Impact C.1 discusses the Project is subject to comply with Sonoma County erosion control ordinances and the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance. Requirements prescribed by the General Construction Permit and Sonoma County erosion control ordinances, along with the stormwater collection and control features proposed as part of the Project, and in identified Mitigation Measure B.4 would ensure the impact of erosion and sedimentation would be less than significant.

Comment F-65 also comments on a measure identified by the Project applicant's biological consultant in their biological resources report, however, the Draft EIR mitigation measures supersede the Project applicant's biological resource report measures.

F-66 The commenter indicates the County has provided the EIR consultant with an incomplete sampling of documents in the record, and provides a list of documents the commenter believes are pertinent to the project.

The County provided all documents which were relevant to the EIR analysis to the EIR consultant in advance of preparation of the Draft EIR. The County's EIR consultant has requested additional information from the County when required. Applicable documents that were used and cited are included in the References for each chapter and section in the Draft EIR. A copy of all references used in the Draft EIR are available for review at the Sonoma County PRMD office at 2550 Ventura Avenue, Santa Rosa.

F-67 The commenter makes a general statement that the Project would cause significant impacts to the environment in the issues discussed in the comment letter. The commenter is referred to responses to Comments F-1 through F-66, above, which address all issues raised by the commenter, and demonstrate, as the Draft EIR does, that that all potential impact would be either less than significant, or mitigated to a less than significant level with measures proposed as part of the Project or with implementation of mitigation measures identified in the Draft EIR.

F.A-1 The commenter asserts that the amount of runoff that the Project would generate has not been accurately quantified, referring to a Storm Water Calculations report prepared by the applicant's engineer that the commenter claims used underestimated rainfall data.

Please see response to Comment F-29.

F.A-2 The commenter asserts that the proposed Project is located in an area of abundant landslides and debris flow hazards. The commenter also asserts that past landslides in the area have been triggered by improperly sited leach fields. The Draft EIR addressed all potential Project impacts associated with landslides and slope failure. Please see also

Master Response GEO-1, GEO-2 and GEO-3 in Chapter II in this Response to Comments Document.

F.A-3 The commenter refers to and comments on grading plans from Atterbury and Associates, Inc., dated December 14, 2010. The Draft EIR did not use or cite this version of the applicant's grading plans identified by the commenter. Those plans were superseded and replaced by a December 6, 2011 version of the applicant's grading, drainage and erosion control plan, and which were addressed in the Draft EIR. Accordingly, no response is required for comments made on a prior version of the applicant's grading plan. In any case, please see responses to Comments E-25 and E-26.

F.A-4 The commenter refers to and comments on grading plans from Atterbury and Associates, Inc., dated December 14, 2010. As discussed in response to Comment F.A-3, above, those plans were superseded and replaced by a December 6, 2011 version of the applicant's grading, drainage and erosion control plan, and which were addressed in the Draft EIR. Accordingly, no response is required for comments made on a prior version of the applicant's grading plan. In any case, please see Master Response GEO-3 in Chapter II in this Response to Comments Document.

The commenter asserts the applicant's geotechnical consultant, RGH Consultants, has submitted conflicting information concerning the 580 Wappo Road septic drainfield site. The commenter states the prevalence of landsliding throughout the site indicates that destabilizing features like septic drainfields and other structures that add concentrated water should be avoided on all of the slopes to avoid triggering landslides and protect water quality in adjacent drainage courses. The commenter incorrectly refers to the proposed leach field as being on the 580 Wappo Road property; the correct proposed location of the leach field is on the 560 Wappo Road property. Please also see response to Comment GEO-3.

The commenter also makes several comments regarding the a potential relationship between a landslide and septic drainfield on the 245 Wappo Road property. These comments do not comment on the current proposed Project or the adequacy of the Draft EIR. However, please see response to Comment GEO-3 for additional information on how the Draft EIR addresses the proposed leach field on the 560 Wappo Road property.

F.A-5 The commenter discussed information that the commenter indicates was submitted to the North Coast Regional Water Quality Control Board (RWQCB); however, this information was not used or cited in the Draft EIR, and it is unknown to what extent, if at all, this information relates specifically to the proposed Project. Consequently, no response is required. Nevertheless, the Draft EIR addressed all potential Project impacts associated with landslides and slope failure. Please see also Master Response GEO-1, GEO-2 and GEO-3 in Chapter II in this Response to Comments Document.

F.A-6 The commenter asserts that the materials submitted by the applicant's engineer to the RWQCB do not adequately represent existing geologic hazards, rainfall quantities and

drainage patterns, and therefore, that proposed mitigations may actually increase geologic instability, and threatens water quality in Mark West Creek and its tributaries. Please see responses to Comments F.A-1 through F.A-5, above.

F.B-1 The commenter indicates the Project applicant's geotechnical reported titled Geotechnical Study Report Update, Rainwater Tanks, dated October 21, 2011 prepared by RGH Consulting fails to demonstrate the geologic stability of the proposed tank site, and that the bases for this opinion are presented in the subsequent sections of the comment letter.

These comments do not provide any specific comments on the adequacy of the Draft EIR; consequently no response is required. However, please see responses to Comments F.B-1 and F.B-2, below.

F.B-2 The commenter indicates the Project site has been the subject of a number of previous geologic investigations and peer review, indicates the applicant's geotechnical investigations are substandard, and refers the reader to subsequent sections of the comment letter.

These comments do not provide any specific comments on the adequacy of the Draft EIR; consequently no response is required. However, please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

F.B-3 The commenter claims the October 21, 2011 geotechnical report prepared by the applicant's geotechnical consultant did not include a geologic map or any geologic cross sections, in violation of published standards of geologic practice. The commenter also indicates that the soil underneath the tank site is not stable or strong, but instead is soft, closely fractured and weak, and of the same type of material that previously failed, forming landslides throughout the site. The commenter also asserts that no laboratory test data or stability analysis resulting from that data was included in the geotechnical report.

Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

F.C-1 The commenter asserts the site is very unstable based on published maps prepared by the California Geological Survey and U.S. Geological Survey, aerial photographs, and from topographic features visible on the site. The commenter asserts a comprehensive investigation of geological stability is missing from the applicant geologic reports. The commenter also asserts that an active landslide on the 245 Wappo Road parcel below the existing residence indicates that this active landslide discharge debris directly into a tributary of the North Fork of Mark West Creek.

Please see Master Response GEO-1 in Chapter II of this Response to Comments Document.

The commenter also asserts that the piecemealing of the proposed project design is one of the reasons why so many geologic site investigations have been prepared by RGH, and according to the Atterbury& Associates grading plan, PJC and Associates. The Draft EIR addresses the entire Project proposal, and reviewed all relevant and applicable geological site investigations in the analysis of Project geologic impacts in the Draft EIR. Collectively, these investigations addressed all the relevant geologic issues of the proposed Project.

In the introduction to Comment Letter F.C, the commenter references his review of an October 20, 2011 version of the applicant's grading, drainage and erosion control plan. Those plans were superseded and replaced by a December 6, 2011 version of the applicant's grading, drainage and erosion control plan, which were used as the basis for the analysis in the Draft EIR. It should be noted, however, that the December 6, 2011 version of the grading plans also make a reference to PJC and Associates (page 2, note number 1 of the grading and drainage notes). According to the applicant's engineer (Atterbury & Associates), this reference to PJC and Associates is erroneous, as PJC and Associates has had no involvement in the Project.

F.C-2 The commenter makes a general statement that the Project includes excavation, fill placement, and retaining wall construction; please see Draft EIR, Chapter III, Project Description for a detailed description of proposed construction activities.

The commenter further indicates that the proposed Project drainage structures would consist of vegetated rock diffusers and rain gardens. The proposed stormwater collection system would consist of more components than that identified by the commenter; please see Draft EIR Chapter III, Project Description for a full description of the proposed stormwater system.

F.C-3 The commenter asserts that the proposed Project is located in an area of abundant landslides and debris flow hazards. The commenter also asserts that past landslides in the area have been triggered by improperly sited leach fields. The Draft EIR addressed all potential Project impacts associated with landslides and slope failure. Please see also Master Response GEO-1, GEO-2 and GEO-3 in Chapter II in this Response to Comments Document.

F.C-4 The commenter indicates it is critical that the applicant's geotechnical report evaluate the geologic stability of the area of proposed grading and includes a geologic map based on the grading plan, but this was not done. The applicant indicates mitigation is required for adverse impacts from construction of habitable structures on geologically unstable sites. Please see Master Response GEO-1 in Chapter II of this Response to Comments Document.

The commenter indicates the Project proponents have conducted geological review in a piecemeal manner, and that no single geologic investigation addresses all the issues relevant to proposed grading of the site. Please see response to Comment F.C-1, above.

The commenter references plan sheets from an October 20, 2011 version of the applicant's grading, drainage and erosion control plan that have been superseded; please see response to Comment F.C-1, above.

F.C-5 The commenter references plan sheets from an October 20, 2011 version of the applicant's grading, drainage and erosion control plan that have been superseded; please see response to Comment F.C-1, above. In any case, please see Master Responses GEO-1 and GEO-2 in Chapter II in this Response to Comments Document regarding concerns raised with respect to how slope stability was addressed in the Draft EIR.

F.C-6 The commenter references plan sheets from an October 20, 2011 version of the applicant's grading, drainage and erosion control plan that have been superseded; please see response to Comment F.C-1, above. In any case, please see responses to Comments E-25 and E-26 for additional information on proposed vegetated rock diffusers and rain gardens.

F.C-7 The commenter repeats comments made in Comment F.C-1; accordingly, please see response to Comment F.C-1, above.

F.D-1 The commenter discusses the County's Groundwater Availability map, and indicates Zones 3 and 4 are considered water scarce, and for these zones, the County has instituted a specific and detailed set of investigative procedures that must be completed to prove that water is available to the proposed project and that use of this water will not adversely affect neighboring water users and the environment.

Please see Master Response HYD1 in Chapter II of this Response to Comments Document.

F.D-2 The commenter describes his interpretation of events in 2004 related to groundwater analysis of the project site.

Subsequent to the RGH report that appears to be the focus of the comment, the RGH study was supplemented by the 2006 Todd Engineers groundwater availability study. See Master Response HYD-1. The Todd study included a thorough review of the RGH study, as well as a review of correspondence from PRMD staff to RGH and Cornell Farms regarding the RGH study. The Todd study provided supplemental information and analysis as appropriate. The studies discussed in Master Response HYD-1 have also been reviewed by the County's EIR consultants' staff hydrologists. The commenter is referred to Master Response HYD-1. County staff notes the unusual situation in which there have been accusations of professional misconduct leveled by and against the commenter.

F.D-3 to F.D-6 The commenter asserts that the applicant's 2006 groundwater availability study used regional geologic maps that were not suitable for characterizing sites, and that the study's conclusions are not site-specific and cannot be relied on.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

F.D-7 The commenter states his interpretation of water availability testing requirements for the Project and describes his interpretation of events and correspondence with County staff related to those requirements. The commenter suggests that the "PRMD-required Zone 4 water availability investigation is not being done" because of "fear of the results." The commenter's suggestion is incorrect, and the commenter has also misinterpreted County requirements for water availability investigations. Please see Master Response HYD-1 in Chapter II of this Response to Comments.

F.D-8 The comment states that the fatal flaw in Todd Engineer's 2006 Supplemental Groundwater Availability Study (2006 Todd Study) is the lack of site data. The commenter states that the County of Sonoma PRMD Zone 3/4 Water Availability Checklist requires that neighboring well owners be contacted. The commenter states that his property adjacent to Cornell Farms has a well, but claims he was not contacted by Todd for its study. The comment also states that the cross section in the 2006 Todd Study was oriented incorrectly and should be revised to maximize the number of wells it includes.

Please refer to Master Response HYD-1 for further discussion of the adequacy of the 2006 Todd Study. As discussed in Master Response HYD-1, the Sonoma County's Groundwater Studies Checklist was developed to provide planning staff with a more formal empirically-based means for evaluating hydrogeology reports for projects, and as a basis for identifying projects with potentially critical groundwater issues that may require additional third party review as determined by the County. While intended to be used in assisting the County in evaluating technical reports, the Checklist is not a County ordinance used for enforcement. The commenter states that he was not contacted by Todd regarding his well, which is located on the property adjacent to Cornell Farms and states that the checklist requires neighboring well owners to be contacted to obtain information that may bear on water availability. The Checklist indicates that items 9 through 12 require interviews with well owners and drillers to obtain more information on well failures or unsuccessful attempts to develop groundwater in an area. However, contacting neighboring well owners or well drillers is not required if it can demonstrated that the information would not be useful or reliable. In a letter responding to County comments on the 2006 Todd Study, Todd explained that checklist items 9 through 12 were not completed because anecdotal interviews with well owners and drillers did not provide reliable or useful information and it was not necessary considering that the well survey successfully acquired 88 local well logs in addition to site wells, most with well construction and hydraulic information. Kleinfelder, Inc. (Kleinfelder) peer reviewed the 2006 Todd Study on behalf of the County. In its letter dated July 2, 2008, Kleinfelder agreed with Todd Engineer's assessment that the information requested in checklist items 9 through 12 was not necessary.

Figure 2 of the 2006 Todd Study shows cross section line A-A' in a northwest to south east orientation. This perpendicular orientation bisects the North and South watersheds and is the most preferable way to graphically represent the topography, geology, and varying water levels or the watershed and drainages. While orienting the cross section more to the west and east, as the commenter suggests, would include the additional groundwater wells, it would render the cross section less representative of the watershed and would provide less information. Todd projected the groundwater wells into the geologic cross section that do not fall on the cross section line. Projecting wells onto the cross section is commonly done and provides a reasonable representation.

F.D-9 The comment asserts that Todd Engineer's statement in its report regarding the number of wells in the area is untrue and the Todd should have shown all groundwater wells and the water levels on the cross section.

In its report (2006 Todd Study), Todd Engineers state that, "[b]ecause relatively few wells have been drilled in the study area and water levels have not been regularly recorded for the existing wells, the water table depicted on the cross section is an estimation of the groundwater profile." Todd Engineers used its professional judgment to determine the wells that best represented the target aquifer and that could best represent the regional water levels. Excluding some of the wells that are located in the Project vicinity from the cross section was not an oversight but a well intentioned decision to use the most pertinent and representative data. As discussed above, in response to Comment F-8, Todd Engineers did not canvass neighboring well owners for information about their groundwater wells because the information would not be as reliable or useful as the information obtained from acquiring over 88 local well logs and the associated hydraulic and well construction data they provide.

F.D-10 The comment asserts that Todd's statement on Page 30 of its 2006 study report regarding obtaining 88 well logs of which about 24 wells were in the vicinity of Cornell Farms, directly contradicts its statement that relatively few wells have been drilled in the study area.

Todd's statements do not contradict one another. Through its well survey, Todd was able to locate and obtain over 88 well logs in the vicinity of Cornell Farms and used the data on these wells to derive hydraulic properties and underlying geology. However, Todd's statement that, "*[b]ecause relatively few wells have been drilled in the study area and water levels have not been regularly recorded for the existing wells, the water table depicted on the cross section is an estimation of the groundwater profile.*" refers to wells that are accessible and have available, reliable water level data that best represents the regional water table elevation. While there may be over 88 wells identified, not all groundwater wells have useable water level data. Todd used professional judgment to calibrate the available and reliable groundwater level data to its estimate of a regional groundwater depth.

F.D-11 The comment states that the estimates of groundwater well yield in the 2006 Todd Study is highly optimistic conjecture that is not based on facts.

The Draft EIR (page IV.C-9) describes the groundwater parameters that Todd was able to estimate using the data obtained from the more than 88 DWR Well Drillers Reports The use of geologic data and hydraulic properties to make reasonable estimates of groundwater conditions is not conjecture but an appropriate application of the principles of groundwater hydrology. The specific capacity, transmissivity, and storativity derived by Todd from the available well reports reasonably represent the typical bedrock hydrogeology and the groundwater flow conditions underlying the Project area. These hydrogeologic parameters were the basis of the groundwater analysis that Todd used to determine whether there would be an adverse effect on the aquifer from the Proposed project. Todd's estimate of average yield between 2 and 30 gallons per minute (gpm), with most wells yielding less than 5 gpm, and the estimated production rate of Cornell Farms wells ranging from 10 and 15 gpm is based on the application of available well information and data to accepted hydrologic principles. In addition, the performance of the Cornell Farms groundwater wells are consistent with the well yield and production rates derived by Todd.

F.D-12 The commenter summarizes that the fundamental geologic data required to characterize the site are simply not presented in the 2006 Todd Study report and the conclusions cannot be relied upon. Furthermore, the comments states that the requirements of groundwater availability investigations in Zone 4 has not been met.

The 2006 Todd study adequately characterizes the geologic conditions, the hydrogeology, and groundwater-surface water interactions with Mark West Creek and the study is reasonable for use in the groundwater analysis in the Draft EIR. The commenter is referred to Master Response HYD-1 for additional discussions regarding the adequacy of the 2006 Todd Study.

F.E-1 The commenter asserts that the Project applicant's biological resource report's site surveys for birds and mammals were inadequate, indicating the surveys were performed at the wrong time of year and wrong time of day.

Please see Master Responses BIO-1 and BIO-3 in Chapter II of this Response to Comments Document.

F.E-2 The commenter asserts that the Project applicant's biological resource report's site surveys for nesting birds were inadequate, indicating: the seasonal timing of surveys was inappropriate; and that nesting bird surveys were improperly timed, occurring at the wrong time of year and wrong time of day.

Please see Master Response BIO-3 in Chapter II of this Response to Comments Document.

F.E-3 The commenter indicates that either the common or scientific names of several special-status bird species listed in the biological resources reports prepared by the Project applicant's biological consultants are incorrect.

The species names as presented in the Project applicant's biological resources report were appropriately revised for the Draft EIR, where necessary, and correctly presented in Section IV.D, Biological Resources.

F.E-4 The commenter asserts that the Project applicant's biological resource report's reported buffer zones for nesting birds is inadequate in size.

Please see Master Responses BIO-1 and BIO-3 in Chapter II of this Response to Comments Document.

F.E-5 The commenter asserts that biological inventories that were conducted as part of the Project applicant's biological resource report were inadequate, indicating systematic mammal surveys were not conducted, including for the dusky-footed woodrat and special status bats; and that two bat species were missing from the Project applicant's biological resource report species list: Townsend's Big-eared Bat and Mexican Free-tailed Bat.

Please see Master Responses BIO-1, BIO-2, BIO-3, BIO-4 and BIO-5 in Chapter II of this Response to Comments Document.

F.E-6 The commenter asserts that a number of special-status bird species are expected to occur in the habitat types described in the Project applicant's biological resources report, but were not mentioned, including those contained in the Sonoma County Breeding Bird Atlas (Burridge 1995), Birds of Sonoma County (Bolander and Parmeter 2001), California Bird Species of Special Concern (Shuford and Gardali 2008), and Birds of Napa County (Heinzel 2006).

Please see Master Response BIO-2 in Chapter II of this Response to Comments Document.

F.E-7 to F.E-20 The commenter asserts that the following species were omitted from the Project applicant's biological resources report:

- Cooper's Hawk (Comment F.E-7)
- Sharp-shinned Hawk (Comment F.E-8)
- Golden Eagle (Comment F.E-11)
- Purple Martin (Comment F.E-13)
- White-tailed Kite (Comment F.E-14)
- Long-eared Owl (Comment F.E-17)
- Loggerhead Shrike (Comment F.E-18)
- Barn Owl (Comment F.E-20)

The commenter also concurs with the Project applicant's biological resources report evaluation of the following species:

- Tricolored Blackbird (Comment F.E-9)
- Black Swift (Comment F.E-10)
- Great Blue Heron (Comment F.E-12)
- American Peregrine Falcon (Comment F.E-15)
- Prairie Falcon (Comment F.E-16)
- Yellow-breasted Chat (Comment F.E-19)

Please see Master Response BIO-2 in Chapter II of this Response to Comments Document.

F.E-21 The commenter asserts that, in order to determine the size of an effective buffer zone for the NSO, the ambient noise levels must be first be characterized, then the construction equipment noise levels identified, and the values compared with USFWS Noise Guidance report to quantify the acreage subject to harassment from auditory disturbance. The commenter adds that it is appropriate to consider all reasonable means to minimize take, including but not limited to seasonal restrictions and substitution of equipment.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.E-22 The commenter indicates that determination of the location and status of NSOs in the years of construction is an important criteria as specified in the USFWS 2011 NSO Survey Protocol. The commenter also asserts that the Project applicant's biological resources report's two NSO surveys followed the USFWS 1992 protocol that differ from the USFWS 2011 protocol, and consequently, that future assessment of the site should follow the USFWS 2011 protocols.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.E-23 The commenter indicates that the location of territories and the status of birds can change year to year. The commenter asserts that it is essential that the locations and status of each NSO or NSO pair within a 1.3 mile radius of the Project site be evaluated during each year of construction, the disturbance potential be evaluated with reference to the USFWS guidelines, and if those activities fall within the recommended harassment distance that measures be taken to reduce the levels of disturbance with the USFWS or wildlife biologist permitted to evaluate Threatened and Endangered Species in California.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.E-24 The commenter asserts the Project applicant's biological resources report does not mention the possibility of Barred Owl in the vicinity; and that their presence should be evaluated prior to any physical alteration of occupied NSO habitat.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.E-25 to F.E-38 The commenter asserts that the following species included on the California Department of Fish and Game (CDFG) "Special Animals" and/or Bird Species of Special Concern that may occur were omitted from the Project applicant's biological resources report:

- Great Egret and Snowy Egret (Comment F.E-26)
- Ferruginuous Hawk and Merlin (Comment F.E-27)
- Osprey (Comment F.E-28)
- Northern Harrier (Comment F.E-29)
- Vaux's Swift (Comment F.E-30)
- Nutall's Woodpecker (F.E-31)
- Allen's Hummingbird (F.E-32)
- Olive-sided Flycatcher (F.E-33)
- Oak Titmouse (F.E.-34)
- Hermit Warbler (F.E-35)
- Yellow Warbler (F.E.-36)
- Grasshopper Sparrow (F.E-37)
- Bell's Sage Sparrow (F.E-38)

Please see Master Response BIO-2 in Chapter II of this Response to Comments Document.

F.E-39 The commenter asserts that the Mountain Quail, included on the American Bird Conservancy "Watch List," is expected to nest in the habitat types on the Project site, but was omitted from the Project applicant's biological resources report.

Please see Master Response BIO-2 in Chapter II of this Response to Comments Document.

F.E-40 The commenter asserts that the Project applicant's biological resource report lacks distributional information on special-status bats limiting its value for biological assessment. The commenter recommends that bat surveys be conducted and all existing structures and potential roost sites or locations for hibernation be conducted by a qualified biologist.

Please see Master Response BIO-5 in Chapter II of this Response to Comments Document.

F.E-41 The commenter asserts that the Project applicant's biological resource report assessment of birds and bats should include comprehensive surveys as part of the initial biological assessment, rather than as mitigation.

Please see Master Responses BIO-1, BIO-3 and BIO-5 in Chapter II of this Response to Comments Document.

F.E-42 The commenter asserts that Impact 8 of the Project applicant's biological resources report does not account for potential disturbance (harassment) of NSO. The commenter also asserts that the exclusion zone specified in Mitigation 8 of the Project applicant's biological resources report may not be sufficient for all species.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.E-43 The commenter asserts that in Impact 9 of the Project applicant's biological resources report, the evaluation of noise disturbance was based on outdated 1996 USFWS guidelines, and should be revisited to address more recent and relevant USFWS 2006 guidelines.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.E-44 The commenter asserts that the Project applicant's biological resource report impact assessment of bats omitted Townsend's Big-eared Bat. Please see Master Response BIO-2 in Chapter II of this Response to Comments Document.

The commenter further noted that that Mitigation 10 in the Project applicant's biological resource report was appropriate. This comment is acknowledged.

F.E-45 The commenter indicates that Table 4, "Special status Species of Birds and Mammals" in the Project applicant's biological resources report includes California tiger salamander (*Ambystoma californiense*), an amphibian.

This error as presented in the Project applicant's biological resources report was appropriately revised and correctly presented in Table BIO-2 in Appendix BIO of the Draft EIR.

F.E-46 The commenter asserts that the Project applicant's biological resource report's coverage and timing of bird surveys was inadequate to detect all nesting bird species.

Please see Master Response BIO-3 in Chapter II of this Response to Comments Document.

F.E-47 The commenter asserts that the Project applicant's biological resource report's mammal surveys are lacking or rely on existing distributional information, which is scant, especially in reference to bats.

Please see Master Responses BIO-1 and BIO-5 in Chapter II of this Response to Comments Document.

F.E-48 The commenter asserts that the Project applicant's biological resource report's survey methodology was inadequate to provide a thorough and comprehensive profile of avian species nesting on the property.

Please see responses Master Response BIO-3 in Chapter II of this Response to Comments Document.

F.E-49 The commenter asserts that the Project applicant's biological resource report made no attempt to determine the use of the habitat on the property to wintering species or non-breeding species.

Please see responses Master Responses BIO-1 and BIO-3 in Chapter II of this Response to Comments Document.

F.E-50 The commenter questions the accuracy of the information provided in the Project applicant's biological resources reports for the proposed Project given the errors noted for the species nomenclature used in the reports.

As described on page IV.D-1, Information Sources and Survey Methodology, of the Draft EIR, the Project applicant's biological resources reports were used as appropriate in Section IV.D, Biological Resources. However, prior to the use of these reports, the information was peer reviewed for its adequacy, completeness, and accuracy. In addition, the EIR consultant's staff biologists reviewed other available background information pertaining to the biological resources in the Project vicinity and conducted a reconnaissance-level survey to verify the existing information. The results of this background review and reconnaissance-level survey were used in conjunction with the information provided in the existing biological resources reports prepared by the Project applicant's biological consultant to prepare Section IV.D of the Draft EIR.

F.E-51 The commenter asserts the buffer zone used in the Project applicant's biological resource report would be inadequate to protect listed species from disturbance, especially the NSO.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.E-52 The commenter asserts the assumptions used in the Project applicant's biological resource report are sometimes speculative or may be dated if and when construction begins, and that mitigation measures in some cases rely on dated guidelines.

Please see Master Response BIO-4 in Chapter II of this Response to Comments Document.

F.F-1 This comment provides an abstract of Comment Letter F.F. The letter focuses on the applicant's biological consultant's biological resources report (Biological Resources Report for the Cornell Winery Project, Ted Winfield & Associates et al., September 2011), and details what the commenter claims are shortcomings of the report in its assessment of the condition of, and potential Project impacts to, the salmonid fishery in Mark West Creek.

The EIR preparers did not solely rely on the conclusions of the applicant's biological resources report, but conducted an independent review of the existing condition of the fishery in the Upper Mark West watershed, and of the potential for the Project to adversely affect the fishery. The significance conclusions in the Draft EIR are based on the independent, objective analysis of the EIR preparers, relying on the best available science. Comment Letter F.F was first submitted in response to the Notice of Preparation for this EIR. The letter was thoroughly reviewed during preparation of the Draft EIR, and is cited as a source in Section IV.D, Biological Resources. It is noted that these comments were prepared prior to preparation of the Draft EIR, and consequently do not address the completeness or accuracy of the analysis and in the Draft EIR.

F.F-2 This comment describes the habitat requirements of salmonids in their freshwater phase, reviews the commenter's experience analyzing similar projects in the vicinity, and notes the degradation of streams that support salmonids, including other streams in the region as well as Mark West Creek. The Draft EIR contains a brief discussion of the natural history and habitat requirements of coho salmon and steelhead trout. Please see Section IV.D, Biological Resources, pages IV.D-20 through IV.D-22; see also the description of surface water quality starting on page IV.C-6 of the Draft EIR, and the discussion of existing cumulative impacts on water quality and stream flow (Impact C.6) and aquatic biological resources (Impact D.12).

F.F-3 This comment reviews the commenter's experience and credentials, as well as the documents he reviewed in preparation of his comments. These are noted, though the comment requires no response.

F.F-4 This comment states that the applicant's biological resources report inadequately addresses recent records of presence of coho salmon in Mark West Creek and the suitability of Mark West Creek for support of coho salmon. The Draft EIR acknowledges the presence of coho salmon in Mark West Creek (page IV.D-21), and specifically examines the potential of the Project to adversely impact coho salmon and coho salmon habitat (Impacts D.6 and D.12).

F.F-5 This comment reviews the recent status and presence of steelhead in Upper Mark West Creek, and states that applicant's biological resources report does not accurately characterize use of Upper Mark West Creek by steelhead. The Draft EIR acknowledges

the presence of central California coast steelhead in Upper Mark West Creek (page IV.D-22) and specifically examines the potential of the Project to adversely affect steelhead and steelhead habitat (Impacts D.6 and D.12).

F.F-6 This comment broadly reviews what the commenter asserts are inadequacies of the applicant's biological resources report, particularly with regard to the Project's potential impacts on coho salmon and steelhead. Please see the response to Comment F.F-1, above.

F.F-7 This comment reviews the applicant's biological resources report's discussion of the possible effects of groundwater pumping on streamflow of the North Fork of Mark West Creek, then goes on at length to draw a connection between groundwater withdrawal and streamflow. Similarly, the Draft EIR also concludes that past development and current land use practices in the Upper Mark West watershed have reduced streamflow and have degraded water quality and aquatic habitat; please see in particular the discussion of Impacts C.6 and D.12. The Draft EIR thoroughly examines the potential for the Project to increase demand on groundwater resources, as well as the potential to reduce groundwater recharge, both of which could adversely affect streamflow (Impacts C.3 and C.4); and for rainwater harvest and site development to affect stormwater runoff and stream discharge (Impact C.5), and concludes these impacts are less than significant. Please see also the responses to Comments E-29 and E-42.

F.F-8 This comment reviews the applicant's biological resources report's discussion of the Project's potential to cause erosion and increase sedimentation, alleging that the discussion inadequately addresses such impacts and ignores the potential for landsliding and mass wasting. The comment goes on to discuss the connection between stream sedimentation and the degradation of salmonid habitat. This comment, and the studies cited in it, were thoroughly reviewed and considered in the preparation of the Draft EIR. The Project's potential to cause erosion is examined in Impact B.4; stream sedimentation is examined in Impact C.1. Mass wasting potential is examined in the Draft EIR in Impacts B.2, B.3, B.5 and B.6. Please see also the response to Comment E-42.

F.F-9 This comment discusses the impairment of Mark West Creek, and its ability to support salmonids, due to high water temperature. The issue raised by this comment was thoroughly reviewed and considered in the preparation of the Draft EIR. The Draft EIR acknowledges that Mark West Creek is listed as impaired for sediment and temperature (pages IV.C-6, IV.C-7 and IV.C-12, and notes the connection between sedimentation and reduced groundwater contribution on the one hand, and temperature on the other. The potential for the Project to reduce groundwater contribution to baseflow, and the potentially adverse effects on streamflow and stream temperature, are examined in Impacts C.3 and C.4. Sedimentation of streams in examined in Impact C.1

F.F-10 This comment discusses cumulative effects on Mark West Creek and other creeks in the Russian River basin, focusing on sedimentation, water withdrawals, and decreased presence of pool habitat. This issue raised by this comment was thoroughly reviewed and considered in the preparation of the Draft EIR. The Draft EIR is in agreement with the

commenter, that water quality and salmonid habitat in Mark West Creek have been degraded due to the cumulative effects of water withdrawals and sedimentation (please see the discussion of Impacts C.6 and D.12). The Draft EIR finds, however (and in contrast to the conclusion of the commenter), that the Project, with the addition of mitigation measures specified in the Draft EIR, would not make a cumulatively considerable contribution to this cumulative impact. It is noted that this comment letter was prepared prior to preparation of the Draft EIR, and does not comment upon the completeness or accuracy of the analysis if the Draft EIR. This comment also reviews the results a study (Li and Parkinson, 2008) conducted of degraded habitat conditions in the North Fork of Mark West Creek, which the researchers link to landslides and water withdrawals on the Cornell Farms property or in the vicinity. The conditions described already existed at the time the NOP for this EIR was issued, and are considered baseline conditions, as well as contributing to the existing cumulative impact on stream resources described in the Draft EIR.

F.F-11 This comment discusses the presence of water impoundments, or ponds, in the Project vicinity and throughout the region, and links water impoundments to reduced peak streamflows, reduced groundwater, and the introduction of invasive species. The Draft EIR describes the two ponds found on the Cornell Farms property (pages IV.C-5 and IV.D-8 and 9). The Project does not propose to construct new ponds, or to alter the operation of the existing ponds. The existing ponds on the Cornell Farms property and elsewhere in the Upper Mark West watershed are considered a part of the baseline condition, and may contribute to the existing cumulative impact on stream resources described in the Draft EIR.

F.F-12 This comment discusses the issue of invasive predatory species in ponds, and their deleterious effects on native, special species, including California red-legged frog and salmonids. The comment asserts that the Project could result in take of listed species. Please refer to the response to Comment F.F-11; the Project does not propose to construct new ponds, or to alter the operation of the existing ponds. The existing ponds are considered a part of the baseline condition, and may contribute to the existing cumulative impact on stream resources described in the Draft EIR.

F.F-13 This comment discusses mitigation measures contained in the applicant's biological resources report, and asserts that certain measures recommended in the applicant's biological resources report would not be sufficient to mitigate the potential for the Project to cause erosion and stream sedimentation. The comment also reviews the applicant's biological resources report's discussion of cumulative watershed impacts, which the commenter finds inadequate.

While the Draft EIR's Biological Resources section (Section IV.D) to some extent relies on the applicant's biological resources report to characterize site conditions, the Draft EIR reaches its own conclusions regarding the potential of the Project to result in impacts on biological resources, and the effectiveness of the Proposed erosion control and other measures included in the Project to avoid adverse impacts. The Draft EIR also includes

an independent analysis of cumulative impacts (see Impacts C.6 and D.12). The comment was prepared prior to preparation of the Draft EIR and does not comment on the accuracy or completeness of the analysis in the Draft EIR. The comment was thoroughly reviewed and considered in the preparation of the Draft EIR.

F.F-14 This comment reviews the status of efforts to re-establish the coho salmon population in Russian River tributaries through release of fish bred in captivity. The comment also discusses cumulative watershed effects on the fishery, and compares and contrasts such effects with natural, periodic disturbances. The comment does not discuss the impact analysis in the Draft EIR. The Draft EIR considers potential Project impacts on the salmonid fishery in Impacts D.6 and D.12. Cumulative effects on stream resources are discussed in Impacts C.6 and D.12.

F.F-15 This comment reviews the observed phenomenon of cyclic climatic variations known as the Pacific decadal oscillation (DCO). The comment states that the applicant's biological resources report did not consider climate change or the DCO in its analysis. The Draft EIR considers the potential for the Project's proposed rainwater harvesting to affect surface flows and groundwater during both average wet years and dry years (Impacts C.3 and C.5). The dry year analysis addresses the concern regarding climate variation. The comment does not comment on the analysis contained in the Draft EIR.

F.F-16 This comment summarizes the previous comments in this comment letter, and reiterates several of the points made in the previous comments, broadly critiquing the applicant's biological resources report. Please refer to the responses to Comments F.F-1 through F.F-15, above.

F.G-1 The commenter indicates some of corms and seeds of the narrow-anthered California brodiaea on the Project site were pre-emptively removed from the Project site prior to completion of CEQA and project approval.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

F.G-2 The commenter indicates the loss of brodiaea population, or reduction in the viability to the threshold at which it may undergo long-term decline, would be a significant direct impact to the population, and a significant cumulative impact to the survival and recovery of the species as a whole. The commenter also asserts that the Project applicant's biological resource report proposed no avoidance or minimization measures to protect or minimize impacts to the existing narrow-anthered California brodiaea on the Project site, and precluded the potential for such measures by pre-emptively removing the population prior to Project authorization or construction. The commenter claims that there is no scientific basis that that transplantation is an effective means of mitigating impacts to the narrow-anthered California brodiaea, and that transplantation is risky.

Please see Master Response BIO-6 in Chapter II of this Response to Comments Document.

The commenter also comments on Mitigation 2 in the Project applicant's biological resource report. Please note the Draft EIR includes more detailed mitigation for project impacts to the narrow-anthered California brodiaea that supersede and replaces the mitigation included in the applicant's biological resource report. Please refer to Mitigation Measure D.1a and D.1b on pages IV.D-36 and IV.D-37 of the Draft EIR.

F.K-1 The commenter claims the October 21, 2011 geotechnical report prepared by the applicant's geotechnical consultant did not include a geologic map, geologic cross sections, laboratory test data, or stability analysis. The commenter asserts that the site needs a slope stability calculation based adequate geologic investigation and laboratory test data to determine factors of safety against gross and surficial failures. The commenter adds a second borehole may be required to be drilled with moisture data in order to calculate the slope stability of the site. Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

The commenter refers to review of stormwater calculations, stormwater BMPs and grading plans from Atterbury and Associates, Inc., citing documents from July 31, 2011 and August 11, 2011 in the comment letter. The Draft EIR did not use or cite these specific sources identified by the commenter. However, please see response to Comment E-25 with respect to how the Draft EIR addresses Project stormwater effects and requirements/permits to which the Project would be subject to ensure Project effects on stormwater runoff would be less than significant.

The commenter also refers to the applicant's grading plans, page C6, Rain Harvest Tanks, and asserts that no construction schematic, calculations, or discussion was identified for this feature. The commenter also asserts the applicant's geotechnical report does not discuss the retaining wall, backfill material, or the foundation requirements, and requests such discussion be reviewed and approved by the Geotechnical Engineer. Please see Master Response GEO-2 in Chapter II of this Response to Comments Document.

F.L-1 The commenter asserts neither of the applicant's groundwater availability studies (2004 RGH study or 2005 Todd Engineers study) conducted specific investigative procedures the commenter indicates are required in Zone 3 and 4 areas. The commenter indicates the studies did not use reliable data or information and which was not substantiated by field data from the site area. The commenter also asserts the Todd study does not address the deficiencies of the RGH study, did not include a long-term aquifer test that should have been conducted, water quality samples were not taken and analyzed, and the study's estimated recharge to the fractured rock aquifer is not verified and documented.

Please see Master Response HYD-1 in Chapter II of this Response to Comments Document.

September 24, 2012

Shirlee Zane, Chair
Sonoma County Board of Supervisors
575 Administration Drive
Santa Rosa, CA 95403

Re: UPE07-008 PC, Cornell Winery upper Mark West Creek

Dear Supervisor Zane and Board:

Thank you for the opportunity to submit comments on the draft EIR for the proposed Cornell Winery in the headwaters of Mark West Creek which is critical habitat of listed species of salmonids facing extinction. I hereby incorporate by reference my comments on this developer's winery proposal of June 6, 2005, and the attachments therein.[1] G-1

"The capacity of the environment is limited, and it is the intent of the Legislature that the government of the state take immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached." (CEQA Public Resources Code 21000(d); 1970).[2] G-2

[1] Please excuse the numerous references to documents that are a part of the review of this developer's winery but may have been removed from the public domain as explained herein. This complication is necessary to tell the complete story of the impacts posed by this project and the exclusion of the public during several different times during the review process.

[2] Public Resources Code 21001. The Legislature further finds and declares that it is the policy of the state to: (a) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state. (b) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise. (c) Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and

In the 1970s, the state recognized that piecemeal development resulted in highly degraded urban and rural environments because decision makers were not required to look at the cumulative impacts of development. At that time, there were still salmon in our northern California rivers and streams, but piecemeal development continued and impacts that were supposed to be identified, understood, minimized, or avoided were not. G-3

As the Board knows, the law confers on local decision makers discretion to weigh the situations, including what constitutes substantial evidence, that face their communities and make judgments accordingly. My comments will focus on two areas. The first is the lack of "substantial" evidence to support the conclusion in the DEIR that no significant unmitigated impacts are posed by this project. The second area addresses the process issue and the local agency's failure to proceed in a manner required by law. G-4

A. No substantial Evidence Exists to Support the Conclusion that Impacts will be Mitigated to Insignificance G-5

Proper review of projects starts with the premis that the developer takes the environment as he finds it. This developer proposes a winery to accompany his new vineyard in an area of critical habitat, scarce water availability, an area where current residence truck in water in late summer, where salmon and steelhead must be protected due to extreme habitat loss and degradation, where soils are erodible, and tree removal exacerbates soil loss and water availability at the most critical times of the year. The sensitive and fragile nature of the area in which this winery is proposed requires consideration commensurate with the additional impacts proposed. G-6

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examples of the major periods of California history. (d) Ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions. (e) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations. (f) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality. (1970; Emphasis added).

The headwaters of Mark West Creek were once, in the not so distant past, healthy functioning habitat. The independent science on this point from the Department of Fish and Game, the National Marine Fisheries Service (NOAA Fisheries), North Coast Regional Water Quality Control Board, and Dr. Stacy Li (retired NMFS) is substantial. Many letters (G. Kamman, P. Baye, R. Waldbaum, etc.), reports, and studies submitted by independent scientists earlier in the review of this developer's winery proposal over the course of approximately 8-years, and hereby incorporated by reference, are substantial evidence of the habitat value of the upper watershed, the adverse impacts that have befallen it, and the County's past role in its demise (see also attached letter from NOAA Fisheries dated April 6, 2012). Many of the practices of concern to NOAA Fisheries like the impacts of tree removal on ground water infiltration and hydrology have lead to the destruction of the upper Mark West Creek habitat. And many of those practices have not yet been changed. G-7

Well Water Will Purportedly Be Relied Upon but Remains Unproven

Some time in the past, the County of Sonoma did take measures that required developers to demonstrate adequate water supply (Policy Number 9-2-28). The County did this for an important reason. It is technically not the job of developers to check whether or not their proposed development will deprive habitat or neighbors of their historic water supplies. That is the job of agencies and public policy. The County recognized that water availability issues were falling through the cracks and, therefore passed a rule that filled those cracks. That rule calls for true groundwater availability analysis in the only way that demonstrates, in a concrete manner, that water demands of new developers pose no harm to neighbors wells or to creek flows (Policy Number 9-2-28). It is disappointing to note that the requirement that a developer demonstrate through actual ground water testing that his development will not harm others, has inexplicably been substituted in this case for assertions, promises, and averaging methods that are supposed to "demonstrate" the same thing as the test originally required by the County's own code. G-8

The developer complained that the test would cost money and staff adopted its theory that the test would purportedly not be helpful to understanding the well's capacity or lack thereof. The developer's forceful message has been clear, we do not want any one including the County to look too closely at the well. To condone and go along with the tactics and

gamesmanship of this developer and his agents is improper on many levels. It undermines the County code, it eviscerates the ability of the County to require such tests in the future, it reverses the County's progress to plan in ways that address twenty first century issues, it encourages other developers to dream up tricks and attempt to get County staff to go along with the charade that real water tests are not necessary, and finally it violates the state policy that says local governments must develop standards and procedures necessary to protect environmental quality. The trick that the developer is attempting to carry out with respect to its well in no way equates with a real pumping test-a County procedure that does track with the state mandate that requires local governments to develop environmental protections.

In short, reasonable people agree that substantial evidence does not equate to a mountain of paper that evades the substantive requirements and spirit of the law. That is a hollow tactic that is meant to divert attention away from the real concrete test. The cost of evading this test, a choice made by the developer. A well that is put forth as a major supply of water in an already over appropriated area of critical habitat must not be tested even if an inconvenient fact may emerge.

G-8 cont.

No where in the County Code does it say that developers may stitch together some ideas on paper which will then substitute for the concrete approach codified in the rule books and that are fair to every one. In the absence of concrete information – a sustained pump down test, the evidence in the record to support the project, falls well below a reasonable person's standard of what is substantial.

B. Public Participation is the Cornerstone of CEQA

"... the public holds a 'privileged position' in the CEQA process 'based on a belief that citizens can make important contributions to environmental protection and on notions of democratic decision making'." (1992 State CEQA Guidelines, Section 15201).

G-9

As a brief summary of the landmark events in the history of the Cornell winery proposal illustrates the erratic process followed by the County, perhaps exacerbated by the demands of the developer, and has been so burdensome on the public as to strongly discourage public participation in environmental review in the future.

G-10

Background Summary

In February of 2001, a pre-harvest inspection was performed by the North Coast Regional Water Quality Control Board for a timber conversion for Henry Cornell lands on Wappo Road, Santa Rosa, California (attached). The proposed conversion of forests to vineyards was very poorly conceived and the resource agencies found numerous errors, misclassifications of streams, misplaced boundary markers, inaccurate mapping, etc.

The winery aspect of this project became public in 2002 when a County approved perc test was performed for a winery on the lands of Henry Cornell on Wappo Road by the very same folks and on the same ownership as the conversion of forests to vineyards.

G-10 cont.

Although the timber conversion and winery were and are clearly one big project with larger impacts than just a vineyard or winery alone, the landowner perpetuated the fiction with the County's acquiescence that the impacts of the winery proposal were completely separate from the logging and soil ripping activities on the same ownership. When this abusive tactic was pointed out to the County (see comments of K. Burr June 6, 2005 and all subsequent comments by this author), it went along with the theory that the development activities were unrelated and allowed the processing of the projects separately. And until this day, the lead agency condones a practice that is antithetical to CEQA – improper segmentation of big projects into smaller projects in order to improperly attempt to minimize the concern over all the development related activities taken as a whole.

G-11

Public Participates Properly and in Good Faith

As the public became aware of the high impact activities in this biologically important and fragile area of upper Mark West Creek and worried about the struggling steelhead and salmon in the creek (as outlined by the resource agencies), they asked for a thorough environmental review and an EIR (see comments of June 6, 2005). The public studied the project impacts, brought many important geologic, biologic, and hydrologic concerns to the public agency (see video of steelhead trout in the N. Fork Mark West Creek adjacent to and abutting the Cornell property previously submitted by C. Caplinger of NOWWE). Despite the fair argument raised by the public, the County failed to require an EIR although substantive disagreements between qualified experts on the impacts posed by the project

G-12

existed. The Planning Commission/Board of Zoning Adjustments (hereafter, the Commission) approved a mitigated negative declaration (MND) and the public appealed that specific decision by paying a large fee in a timely manner and submitting the proper paperwork within 10 days of the Commission's decision. The specific issue was whether the Commission properly determined that there were no substantive disagreements between qualified experts. The Board of Supervisors heard the appeal, however it did not enter a decision.[3]

The developer subsequently attempted to abandon its poor environmental document and resubmitted another application for the winery. The County did not notify the appellant that this had occurred or that a new permit application had been allowed. Instead of explaining to the developer that this tactic was a "modification" of a permit stayed under an appeal, the County accepted the second application for the winery and assigned it a new number (UPE07-008). This was only the first time the strong policy that favors public participation in the environmental review of development projects was violated.

When the public discovered that a new number had been assigned to the same winery proposal, it again participated and reviewed the documents produced and made very constructive comments many of which were re-affirmed, as the record reflects, by independent firms and hydrologists and biologists of the highest caliber.[4] The County, however did not

G-12 cont.

[3] The relevant local rule states that, " [t]he filing of an appeal pursuant to this section shall operate as a stay on issuance, modification, or revocation, as the case may be, of any permit with respect to which the appeal is taken. The action shall be stayed until the Board of Supervisors has entered its decision."

[4] The documents provided to the County - public comment and scientific studies were removed from the public domain, thereby requiring hours and hours of additional work on the part of the concerned public to duplicate those efforts previously made to inform the public process (UPE03-0092; see scoping comments of S. Volker, Esq.). Such highly improper process left unchecked has a chilling effect on public participation, thwarts the privilege the legislature and the courts have repeatedly conferred on the public during the CEQA process, increases the burden on the lay public to follow a process that is not predictable or fair, and violates the strong policy

acknowledge the on-going substantive disagreement between qualified experts, and once again the Commission approved that environmental document. Although the public had gone to great expense and labor to participate in the review of the first MND only to be denied a ruling on that process, it once again tried to get a hearing on what it believed was another improper ruling of the Commission and filed a timely appeal to the Board of Supervisors.

The Board of Supervisors did not stay the revocation or modification of the permit. Instead it allowed the developer to slip out from under another flawed document during the appeal period. The developer's next move, in what is not supposed to be a game, was that it be allowed to do an EIR and avoid review of the Commission's earlier decision. The developer tried to shake off the public's concerns and involvement, and unfortunately the County allowed this gamesmanship to occur and failed to proceed in a manner required by law.

G-12 cont.

Conclusion

Thank you for your consideration of the above points. I urge the Board to require the Permit and Resource Management Department to replace the files removed from the public domain and to properly evaluate the impacts of the whole project which consists of the winery and related timber

G-13

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that public participation is a core tenet of CEQA.

When the public properly appealed the approval of UPE03-0092 by the unelected Commission in 2005, that process was not "stayed," as required, pending the outcome of the appeal. (California Code of Regulations 15185(a) and Sonoma County Code 26-92-160). The appeal raised issues specific to the Commission's work. The appellant never withdrew the appeal and no ruling or findings were issued by the Board of Supervisors on the specific issues raised in the appeal. Had the appeal been properly heard and ruled upon, the lengthy burdensome process that ensued might have been avoided. Since the time of the original appeal, the concerns of the public have, as the record reflects, been affirmed and ratified many times by independent reviewers as if the public itself were performing the environmental review for the Commission.

conversion and vineyard operations. I look forward to the Board upholding the requirement for a proper sustained pump down test for this and all projects proposed in areas of marginal and scarce water availability.

G-13 cont.

G-14

Sincerely,

Kimberly Burr
Attorney at Law
Post Office Box 1246
Forestville, CA 95436

cc: Dave Hardy
NOWWE

Attachments

NOAA Fisheries 4-6-12
Pump Guidelines
NMFS and Trout Unlimited Comments
Perc test form 11-1-02
NMFS 4-12-1
NMFS 9-18-12
NCRWQCB letter 2-28-01

Letter G. Kimberly Burr, Attorney at Law

Introduction

The commenter's letter contained comments on the Draft EIR, in addition to a number of attachments. This letter and its attachment are referred to in this Response to Comments Document as Letter G, and Attachments G.1 through G.7, respectively. The copy of Comment Letter G (excluding the attachments) precedes this response, and all substantive comments raised in Letter G are responded to below.

Attachment G.1 and G.7 are correspondence associated with regulatory/permit processes not directly associated with the proposed Project. Attachment G.2 is a copy of the County Permit and Resource Management Department's Well Pump Test Guidelines in Water Scarce Areas. These attachments do not comment directly on the adequacy of the Draft EIR, and consequently, do not require a response.

Attachments G.3 and G.4 consist of information that is in relation to prior proposals that are no longer pending, and do not comment on the adequacy of the Draft EIR. In addition, in Comment G-1, below, the commenter incorporates by reference the commenter's comments on the developer's winery proposal of June 6, 2005, and the attachments therein. As relevant, prior submittals of information were previously considered by County staff in the context that they were made. In some cases, where deemed warranted, County staff has since required further studies or peer review in response to the commenter's pre-Draft EIR submissions, and/or the Project applicant has since revised certain elements of its Project description; this relevant new Project information and analysis are reflected in the Draft EIR.

Attachment G.5 is a comment letter previously submitted by the National Marine Fisheries Service (NMFS) in response to the Notice of Preparation (NOP) that was considered by the County prior to preparation of the Draft EIR. Attachment G.6 is a NMFS comment letter on the Draft EIR; this letter was submitted separately by NMFS, and is included and responded to as Comment Letter B in this Response to Comments Document.

Attachments G.1 through G.7 are included in Appendix G at the end of this Response to Comments Document.

Responses to Letter G

G-1 The commenter indicates the headwaters of Mark West Creek is critical habitat of listed species of salmonids facing extinction.

A discussion of special-status aquatic species and associated habitat is described in the Draft EIR Biological Resources section setting on pages IV.D-21 to IV.D-21, and Table BIO-2 in Draft EIR Appendix BIO; the applicable regulatory framework for these species is presented in the Draft EIR on pages IV.D-25 to IV.D-34; and the potential

Project impacts to special-status aquatic species are addressed in the Draft EIR in Impact D.6, and cumulative impacts in Impact D.12.

The commenter incorporates by reference the commenter's comments on the developer's winery proposal of June 6, 2005, and the attachments therein. The commenter is referred to the Introduction to the responses to Letter G, above, which describes how the information that is in relation to prior proposals that are no longer pending is addressed in this Response to Comments Document.

G-2 The commenter cites the Public Resources Code, Section 21000(d). No response is required for this cite.

G-3 The commenter asserts that piecemeal development in the 1970s resulted in highly degraded urban and rural environments because decisionmakers were not required to look at cumulative impacts of development.

This comment does not address the adequacy of the Draft EIR; consequently, no response is required. However, the comment will be considered by the decisionmakers in making a determination whether to approve the Project.

G-4 The commenter asserts that there is a lack of substantial evidence to support the conclusion in the Draft EIR that no significant unavoidable impacts are posed by the Project, and also asserts that the lead agency failed to conduct the EIR process properly, as required by CEQA. With respect to the first issue, the commenter is referred to responses to specific comments made in Comment G-5 through G-8; with respect to the second issue, the commenter is referred to responses to specific comments made in Comment G-9 through G-12.

G-5 and G-6 The commenter states that no substantial evidence exists to support the conclusion that impacts will be mitigated to insignificance. The commenter indicates the developer proposes a winery to accompany his vineyard in an area of critical habitat, scarce water availability, where current residents truck-in water in late summer, where salmon and steelhead must be protected due to extreme habitat loss and degradation, where soils are erodible and tree removal exacerbates soils loss and water availability at the most critical times of year. The commenter adds the sensitive and fragile nature of the area in which the winery is proposed requires consideration.

With respect to water availability and how the Draft EIR addresses potential Project water use impacts, including to the aquifer and dry season base flows in Mark West Creek, please see Impacts C.3 and C.4 in the Draft EIR and response to Comment G-8, below. With respect to how the Draft EIR addresses critical habitat and potential Project impacts to aquatic species including salmon and steelhead, see response to Comment G-1, above. With respect to how the Draft EIR addresses potential impacts to sensitive natural communities, including tree loss, please see Impact D.2 in the Draft EIR. With respect to how the Draft EIR addresses potential Project effects on soil erosion and

sedimentation, please see Impacts B.4 and C.1 in the Draft EIR. With respect to how the Draft EIR addresses cumulative impacts, please see response to Comment G-7, below.

G-7 The commenter indicates the headwaters of Mark West Creek were once healthy, functioning habitat. The commenter adds that that there is substantial evidence of the habitat value of the upper watershed, and that adverse impacts have occurred. The commenter notes that impacts of tree removal on groundwater infiltration and hydrology have lead to the destruction of habitat in upper Mark West Creek.

The Draft EIR acknowledges the degraded condition of aquatic habitat in the Upper Mark West watershed, and describes the adverse effects that cumulative development has had in the Upper Mark West watershed. The Draft EIR Impact D.12 discusses that biological communities and habitats have been affected by the changes in land use within the watershed. The Draft EIR also indicates that 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, which have led to deterioration of suitable spawning and rearing habitat for salmonids over the past several years.

Please note however, that, as discussed in detail in the Draft EIR, all potential Project hydrologic and water quality impacts are determined to be less than significant. Furthermore, all Project impacts to biological resources were determined to be less than significant with mitigation. When considering the extensive water conservation measures and stormwater control and management measures proposed as part of the project, compliance with all applicable permits and regulations, and implementation of all mitigation measures, the Project's contribution to cumulative impacts would not be cumulatively considerable. Please see also Master Response CUM-1 in Chapter II of this Response to Comments Document.

G-8 The commenter discusses Sonoma County Policy 9-2-28, and indicates it calls for groundwater availability analysis to show that water demands of new developments pose no harm to neighbors' wells or to creek flows.

The purpose of Sonoma County PRMD Policy and Procedure Number 9-2-28 was to set standards for well pump tests for "residential construction in water scarce areas or second dwelling units in marginal water availability areas of Sonoma County." Consequently, this policy does not directly apply to the proposed Project. It should be noted the production well that currently serves the Cornell Farms vineyards and which would serve the proposed Project was installed on the property prior to the adoption of this procedure.

Please also see Master Response HYD-1 in Chapter II of this Response to Comments Document.

The commenter also offers a number of opinions that do not comment on the adequacy of the Draft EIR. However, these opinions will be considered by the decisionmakers in making a determination whether to approve the Project.

G-9 The commenter cites an excerpt from CEQA Guidelines, Section 15201. No response is required for this cite.

G-10 to G-11 The commenter makes references to past events the commenter indicates have occurred on the Henry Cornell lands, including a 2001 preharvest inspection report by the North Coast Regional Water Quality Board (RWQCB, included in Attachment G.7), and a 2002 well percolation test that was approved by the County (included in Attachment G.4). The commenter asserts that timber conversion and the winery were, and are, one project.

The commenter is referred to the Introduction to the responses to Letter G, above, which describes how the information that is in relation to regulatory/permit processes not directly associated with the proposed Project, or prior proposals that are no longer pending, is addressed in this Response to Comments Document.

Moreover, the existing Cornell Farms vineyards, including any timber conversion that occurred as part of vineyard development, are not part of the proposed Project; please see response to Comments F-3 to F-6 for additional information.

G-12 The commenter makes reference to events associated with a prior proposal, and to an environmental review document that has been superseded. The commenter is referred to the Introduction to the responses to Letter G, above, which describes how the information that is in relation to prior proposals that are no longer pending is addressed in this Response to Comments Document.

G-13 The commenter urges the Board of Supervisors to require PRMD to replace files removed from the public domain and to evaluate the impacts of the whole project, which, she states, consists of the winery and related timber conversion and vineyard operations.

The Draft EIR evaluates all potential direct, indirect and cumulative environmental impacts associated with the proposed Project, and identifies feasible mitigation to ensure any significant impacts would be mitigated to a less-than-significant level. As discussed above, the existing Cornell Farms vineyards, including any timber conversion that occurred as part of vineyard development, are not part of the proposed Project; please see response to Comment F-3 to F-6 for additional information. All public files have been and continue to be available at PRMD.

G-14 The commenter asks the Board of Supervisors to uphold the requirement for a sustained pump down test for this and all projects proposed in areas of marginal and scarce water availability.

With respect to the need for a sustained pump test for the proposed Project, please see response to Comment G-8, above.

9/6/2012

Comment Letter H

Members of the Planning Commission:

My name is Laura Waldbaum, I live on St Helena Rd. I am here representing the NOWWE organization. Prior to ESA's preparation of the Draft EIR, NOWWE submitted these exhaustive scoping comments, Including regulatory agency comments, and scientific reviews of project consultant reports. Almost without exception these comments were ignored by ESA, and the important issues raised by NOWWE were not addressed. I will summarize six of the DEIR's significant flaws. Please forward my comments to the Board of Supervisors for their consideration. H-1

First, the DEIR does not adequately analyze or mitigate the project's water use. The DEIR relies on outdated and unreliable groundwater studies. The county required aquifer testing still has not been done, with no explanation as to why. No current studies exist which explain the regulatory agency documented decrease in summer flows that coincided with the development of the Cornell vineyard, and the proponents have been unwilling to do them The review process should be suspended until the National Marine Fisheries Service completes its ongoing water usage survey, which began when flow gauges were installed this year. H-2 H-3 H-4 H-5

Second, the project will substantially increase erosion and runoff at the site, yet the DEIR fails to adequately analyze and mitigate these impacts. NOWWE noted specific concerns with the few described erosion control plans, yet these concerns were disregarded with no explanation. H-6

Third, the DEIR's discussion of biological impacts is inadequate. The project will adversely affect numerous special status species. But the biological resource surveys that have been performed to date are wholly deficient. They were conducted at an incorrect time of day and the wrong time of year. Moreover, salmonids have been stranded and killed as Mark West Creek was sucked dry, and the project will substantially increase water use on the property. Yet the DEIR inexplicably concludes that adding chain link fencing and an education program to the project will ensure that salmonids are not affected at all. H-7 H-8 H-9 H-10

Fourth, the project will be sited in a geotechnically unstable area, raising the possibility of disastrous landslides and other slope failures. The proposed winery is only a few feet from a landslide mapped by their own geotechnical consultants. The DEIR also ignores the fact that the effects of seismic activity are concentrated on ridgetops, which is where the project will be located. H-11 H-12

Fifth, the DEIR unlawfully postpones the formulation of mitigation measures. The public cannot comment on these unknown future plans. H-13

Finally, the project could have substantial traffic impacts and further damage already degraded St. Helena Rd., but the DEIR dismisses these concerns. The project will send up to one construction truck every six minutes onto St. Helena Road for nineteen months. Yet the DEIR concludes that this impact is "limited in duration" and need not be analyzed. Nineteen months of construction is not "limited" under any reasonable definition of the term. H-14

The DEIR is inadequate and should be rejected. Thank you for your consideration. H-15

Letter H. Laura Waldbaum

H-1 The commenter claims that her organization's scoping comments were ignored, and that important issues were not addressed in the Draft EIR.

All substantive scoping comments made in response to the NOP were appropriately considered prior to preparation of the Draft EIR. Furthermore, the scoping comments referenced by the commenter made in response to the NOP are included as Letter F in this Response to Comments Document. Consequently, all substantive comments in Letter F are responded to directly in this document. Similarly, many of those scoping comments were repeated in Letter E in the Response to Comments Document, and all substantive comments raised in Letter E are also responded to directly. Please see also the Introduction to responses to Letters E and F for additional detail.

H-2 The commenter makes a general claim that the Draft EIR did not adequately analyze or mitigate the Project's water use. The commenter is referred to responses to Comments E-10 through E-14, and F-3 through F-11.

H-3 The commenter asserts the Draft EIR relied on outdated and unreliable groundwater studies. The commenter is referred to response to Comments E-16, F-13 through F-16, and Master Response HYD-1 in Chapter II in this Response to Comments Document.

H-4 The commenter asserts that the County required aquifer testing has not been completed. The commenter is referred to responses to Comments E-17 through E-23, F-17 through F-22, and Master Response HYD-1 in Chapter II in this Response to Comments Document.

H-5 The commenter asserts that no current studies exist which explain the regulatory agency documented decrease in summer flows that coincided with development of the Cornell Farms vineyards, and the Project proponents have been unwilling to do them. The commenter states that consideration of the Project should be suspended until the National Marine Fisheries Service completes its ongoing water usage survey, which the commenter states began when flow gauges were installed earlier this year.

In response, it is noted that the Draft EIR carefully analyzes the Project's predicted water demand and finds that the Project would decrease, not increase, pumping of groundwater, and that rainwater harvest would not adversely affect streamflows (Impacts C.3 and C.5 in Section IV.C, Hydrology and Water Quality). Furthermore, the water balance calculations reviewed in the Draft EIR (see previously cited impact discussions) indicate that the Project would decrease existing groundwater use in the Cornell Farms vineyards. Existing water use by the vineyard is considered part of the baseline condition, not part of the Project; furthermore, existing groundwater withdrawals and surface water diversions throughout the Upper Mark West watershed are considered in the cumulative analysis contained in the discussion of Impact C.6 and D.12.

H-6 The commenter asserts the Project would substantially increase erosion and runoff at the Project site, yet the Draft fails to adequately analyze and mitigate these impacts. The commenter is referred to responses to Comments E-25 to E-26, and F-29 through F-33.

H-7 The commenter asserts that the Draft EIR's discussion of biological impacts is inadequate. The commenter indicates the Project will adversely affect numerous special-status species, but the biological resource surveys that have been performed are deficient, were conducted at the incorrect time of day and the wrong time of year. The commenter is referred to responses to Comments E-33 to E-35, and F-37 through F-38; and Master Responses BIO-1 through BIO-6 in Chapter II of this Response to Comments Document.

H-8 The commenter states that salmonids have been killed because of the dewatering of Mark West Creek, and that the Project would exacerbate this situation. In response, please see the response to Comment H-5, above.

H-9 The commenter asserts that the Project will substantially increase water use on the property. The commenter is referred to responses to Comments E-10 through E-14, and F-3 through F-11.

H-10 The commenter states the Draft EIR concludes that adding chain link fencing and an education program to the Project would ensure that salmonids would not be affected. The commenter mischaracterizes the Project impact assessment of salmonids in the Draft EIR. Please see responses to Comments E-43 to E-43, and F-48 to F-54.

H-11 The commenter asserts that the Project would be sited in a geotechnically unstable area, raising the possibility for landslides and other slope failures. The commenter is referred to responses to Comments E-47 through E-54, and F-55 through F-59; and Master Responses GEO-1, GEO-2 and GEO-3 in Chapter II in this Response to Comments Document.

H-12 The commenter asserts the Draft EIR ignores the effects of seismic activity on ridgetops. The commenter is referred to responses to Comments E-54 to E-55, and F-63.

H-13 The commenter asserts the Draft EIR postpones the formulation of mitigation measures. The commenter is referred to response to Comment F-65; and Master Responses BIO-3 and BIO-5 in Chapter II of this Response to Comments Document.

H-14 The commenter asserts the Project could have substantial traffic impacts and further damage St. Helena Road.

The commenter indicates the Project would send one construction truck every six minutes onto St. Helena Road for nineteen months. The commenter inaccurately characterizes the frequency of Project truck trips over the duration of the construction period. The commenter is also referred to response to Comment E-58, which addresses revisions made to both peak daily Project truck trips and total Project truck trips over the 18-month construction duration, as a result of comments made on the Draft EIR, and as staff-

initiated changes. These revisions would not change any conclusions previously reached in the Draft EIR regarding short-term construction impact effects on traffic flow, safety, and roadwear, which would continue to remain less than significant.

The commenter indicates that nineteen months of construction is not limited. Construction would be finite in duration and therefore considered limited, as opposed to long-term operations of the life of Project.

H-15 This comment does not address the adequacy of the Draft EIR; consequently, no response is required. However, the comment will be considered by the decisionmakers in making a determination whether to approve the Project.

Summary of Public Hearing Comments on the Draft EIR

A public hearing on the Draft EIR was held by the County on September 6, 2012. The following individuals provided spoken comments on the Draft EIR. The comments of each individual commenter from the public hearing are contained in the combined Planning Commission and Board of Zoning Adjustments Meeting Minutes, below. Each comment is identified with a numeric designator. Responses to these comments follow the combined Planning Commission and Board of Zoning Adjustments Meeting Minutes.

Sonoma County Combined Planning Commission and Board of Zoning Adjustments

MINUTES

Sonoma County Permit and Resource Management Department
2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 565-1900 FAX (707) 565-1103

Date: September 6, 2012
Meeting No.: 12-007

ROLL CALL

Commissioners
Dick Fogg
Shawn Montoya
Komron Shahhosseini
Jason Liles
Pam Davis

Staff Members
Jennifer Barrett
Sigrid Swedenborg
David Hardy
Bill Passaretti
Sue Gallagher, Deputy County Counsel

1:00 PM Call to order and Pledge of Allegiance
Correspondence
Board of Supervisors Actions
Commissioner Announcements/Disclosures
Public Appearances
Items scheduled on the agenda

PLANNING COMMISSION UNCONTESTED CALENDAR

Item No.1 Time: 1:05 p.m. File: ZCE09-0032
Applicant: Maureen McSorley and Ed Brady Staff: Cynthia Demidovich
Env. Doc: Categorical Exemption
Proposal: Request to rezone 2.01 acres from the RR (Rural Residential), B6-1 acre density district to the RR (Rural Residential), B7 (Frozen Lot Size) district, or other appropriate districts in order to comply with Conditions of Approval of Lot Line Adjustment LLA09-0027.
Location: 1515 Gumview Road, Windsor
APN: 066-030-004 Supervisorial District: 4
Zoning: RR (Rural Residential), B6-one acre density

Action: **Commissioner Liles** moved to recommend approval of the request to the Board of Supervisors. Seconded by **Commissioner Davis** and passed with a 5-0 vote.
Appeal Deadline: N/A
Resolution No.: 12-019

Fogg: Aye Montoya: Aye Shahhosseini: Aye Liles: Aye Davis: Aye
Ayes: 5 Noes: 0 Absent: 0 Abstain: 0

PLANNING COMMISSION REGULAR CALENDAR

Item No.2 Time:	1:05 p.m.	File:	PLP11-0028
Applicant:	Francis Ford Coppola Winery LLC	Staff:	Sigrid Swedenborg
Env. Doc:	Categorical Exemption		
Proposal:	General Plan Amendment and Zone Change to fulfill a Condition of Approval for a previously approved Lot Line Adjustment to eliminate split land use and zoning designations on newly configured parcels.		
Location:	300 Via Archimedes, Geyserville		
APN:	140-030-026 and -027	Supervisorial District:	4
Zoning:	K (Recreation and Visitor Serving Commercial), LIA (Land Intensive Agriculture)B6-40 acre density, Z (Second Unit Exclusion)		

Sigrid Swedenborg summarized the staff report, which is incorporated herein by reference. Commissioner Liles asked if any complaints had been received. Staff Swedenborg said that the typical noticing procedure was followed and there were no comments received.

Public Hearing Opened: Jean Kapolchok, applicant, summarized the reason for the request that will improve the agricultural use of the property and reconfigure the boundary configurations to make them more sensible.

Commissioner Liles said the proposal makes sense for the property overall, but expressed concern about "rumors" that there are plans for lodging. Ms. Kapolchok said that feasibility studies had been conducted, but the site is very constrained and the developable area is already reserved for septic disposal. There are no active plans to develop a hotel at this point. Commissioner Liles asked what outreach had been conducted and Ms. Kapolchok said that extra efforts had been made by herself and Francis Ford Copolla Presents in addition to the typical staff notification.

Public Hearing Closed.

Action:	**Commissioner Lyle** moved to recommend approval of the request to the Board of Supervisors. Seconded by **Commissioner Davis** and passed with a 5-0 vote.
Appeal Deadline:	N/A
Resolution No.:	12-020

Fogg: Aye	Montoya: Aye	Shahhosseini: Aye	Liles: Aye	Davis: Aye
Ayes: 0	Noes: 0	Absent: 0	Abstain: 0	

BOARD OF ZONING ADJUSTMENTS REGULAR CALENDAR

Item No.3 Time:	1:10 p.m..	File:	CPH11-0005
Applicant:	Jerry Terman	Staff:	Sigrid Swedenborg
Env. Doc:	Categorical Exemption		
Proposal:	Coastal Permit with Hearing for a new 1,047 square foot one story single family dwelling located west of Highway 1 on a 7,841 square foot parcel.		
Location:	405 McChristian Avenue, Bodega Bay		
APN:	100-230-011	Supervisorial District:	5
Zoning:	RR (Rural Residential), CC (Coastal Combining), B7, G (Geologic Hazard Combining)		

Sigrid Swedenborg summarized the staff report, which is incorporated herein by reference.

Commissioner Davis asked about the difference in the dunes. Staff Swedenborg said that the older dunes are more stable than newer ones and established and that is the best place for development on the beach.

Commissioner Fogg asked if there is a will serve letter for the water and Staff Swedenborg said there is.

Commissioner Montoya asked if the applicant could apply for a building permit after the permit is approved, and Staff Swedenborg said yes, although the vegetation plans still need to be approved and staff wants to see more screening for the parking area. These conditions can be cleared through Plan Check at a staff level, which is usually done for residential construction.

Public Hearing Opened:

Larry Reese and Jerry Terman, owners, thanked staff for their hard work. They have worked with a neighbor who expressed concern about a two story house and changed it to one story. Their goal is to be a good neighbor and create a house that has aesthetic appeal that fits in with the landscape. They know the neighbors, water issues, and have been on the coast for a long time.

Public Hearing Closed.

Commissioner Fogg asked if the geotechnical report has expired. Staff Swedenborg said a new study had been done.

Action:	**Commissioner Davis** moved to approve the request with modified Condition 12. Seconded by **Commissioner Shahhosseini** and passed with a 5-0 vote.
Appeal Deadline:	10 calendar days
Resolution No.:	12-016

Fogg: Aye	Montoya: Aye	Shahhosseini: Aye	Liles: Aye	Davis: Aye
Ayes: 5	Noes: 0	Absent: 0	Abstain: 0	

Item No.4 Time:	1:30 p.m.	File:	UPE07-0008
Applicant:	Guy Davis	Staff:	David Hardy
Env. Doc:	Environmental Impact Report		
Proposal:	Review the Draft Environmental Impact Report for Cornell Winery.		
Location:	100, 245, 420, 500 and 560 Wappo Road, Santa Rosa		
APN:	028-260-041, -025, -023, -047, 028-250-007	Supervisorial District:	1
Zoning:	RRD (Resources and Rural Development). B6 – 100 acre density, BR (Biotic Resources) And RR (Rural Residential), B6-16 acre density, BR (Biotic Resources), SR (Scenic Resources)		

David Hardy summarized the staff report, which is incorporated herein by reference.

Commissioner Fogg asked what was expected from the commission. **Staff Hardy** said the role of the commission is to listen. The applicant decided after the project was approved and appealed to do an EIR. The hearing is part of the 45 day comment process. No recommendation needed to be made, and the purpose is to accept comments on the adequacy of the DEIR. Deputy Director Barrett added that the merits of the projects were not under consideration, only the adequacy of the EIR. A final EIR which responds to comments will be prepared after the close of comment period on September 24th.

Public Hearing Opened:

Kimberly Burr, representing NOWWE, based in headwaters of Mark West Creek, thanked staff for their work and said the public has also put in a lot of time. The region is critical habitat. The process that the public has had been put through by the County has been improper and horrifying. The County refused to hear their appeals and the developer and his associated want to globalize the North Coast and to sell as much water stored in wine bottles to China as much as possible. PC-1

Commissioner Liles said that Ms. Burr needs to direct her comments to the DEIR.

Ms. Burr said that the National Marine Fisheries Service commented about impacts to steelhead and salmon in May of 2012, and said the County is not evaluating well and grading permits adequately. Projects are being approved in the absence of knowledge there is enough water. Scientists in 2008 said that the Russian River water resource is being impacted by approving development and is putting salmon at great risk by depleting water supplies. This project could further impact the salmon. The precedent set could be good to protect fish, and not approve projects that deplete stream flow. Ms. Burr asked for the right thing to happen. PC-2

Laura Waldbaum, St. Helena Road and NOWEE representative, commented that the comments in the DEIR were ignored by ESA. Important issues were not addressed and the DEIR is flawed. It does not analyze the project's water use and relies on outdated studies. Aquifer testing has still not been done. No current studies explain the regulatory-documented decrease in summer flow resulting from Cornell Winery and the applicant has been unwilling to do it. The review process should be suspended until the National Marine Fishery Service completes its ongoing water usage survey in the area which began this year.

The project will substantially increase erosion and runoff at the site, but the DEIR fails to adequately analyze and mitigate. The concerns expressed were disregarded with no explanation.

The DEIR discussion of biological impacts was inadequate. The project will impact several biological species, but the DEIR surveys are wholly deficient and were conducted at the wrong time of day and year. The DEIR recommendation for education is deficient. The winery is only a few feet from landslide mapped by the applicant's geotech consultants and ignores the fact the effects of seismic activity are concentrated on ridgetops where the winery will be located. The DEIR unlawfully postpones the formulation of mitigation measures and the public can't comment on unknown future plans. The project could have substantial traffic impacts and further damage St. Helena Road but the DEIR dismissed these concerns. Additional construction trucks will impact the roads for 19 months, but the DEIR says that because it is unlimited in construction it is not included. Waldbaum asked for rejection of the DEIR. PC-3

Griffin Okie, St. Helena Road, four miles downstream from Cornell Winery, said there used to be thousands of fish at bridge. This year he counted 50 fingerlings in spring and there are five left. There used to be swimming holes and now the creek is knee deep. Okie wants to know where the water went, and commented that what reduced it is the grapes planted in 2002. We better wake up as a county and not allow grapes to be planted on hillsides. Children and grandkids will never see the fish that he saw just ten years ago. PC-4

Jim Doerksen, St Helena Road resident for 40 years, has been to a lot of hearings over the years. At the beginning, both north and south forks of Mark West Creek have been declared Class 1 streams by many of the California agencies. The DEIR now calls the upper reaches intermittent due to extraction of groundwater and goes on to say the results are insignificant. Doerksen argued that the results are dramatically significant. There is little or no water left in the creek – and going through Cornell they are dry. This year, the Corps planted 8,000 coho salmon in his back yard as part of a restoration effort and he only has found one fish left. The water levels are now 0.2 cubic feet per second, probably the lowest in million years. In his opinion, the DEIR is pure whitewash. PC-5

Public Hearing Closed.

Commissioner Fogg asked if the conservation easement originally offered in the proposal has been pulled. **Staff Hardy** said that was correct, the reason being that the applicant felt they had fully mitigated the water use issues and without need for the conservation easement. PC-6

John Holdredge, applicant, said that the conservation easement was initially offered as a measure to end all discussion water impacts, and they felt it was marginally justified at the time. The opposition attacked it and said it was meaningless, so the applicant continued to mitigate by creating a rainwater harvest plan, wet season pumping, re-use of water in the winery which puts a 70,000 gallon surplus back into the groundwater. They felt that water use was over-mitigated with conservation measures which made the need for an easement go away.

To justify the project it has to make economic sense. The conservation easement will cause problems as they have spent a lot of money to mitigate and paid for an EIR. Holdredge said it would send a bad message to agriculture to have to give out an easement to have a use that is already allowed under zoning.

Commissioner Fogg asked what the zoning is on the conservation easement. **Staff Hardy** said it was Rural Residential, 15 acre density and Scenic Resource. **Commissioner Fogg** asked what Cornell plans to do with the new 28 acre parcel he bought that is contiguous to the Cornell Vineyards. Holdredge said there are no plans currently to develop the site other than residential. The property is zoned Rural Residential. PC-7

Commissioner Davis said the Waldbaum letter mentioned aquifer testing required that had not yet occurred. Staff Hardy said that critics of the mitigated neg dec thought that the County should be required to do aquifer testing by putting monitors on the other wells in the vicinity and then pump them like crazy to see what happens. The problem with doing that is the other wells are a long way away and are not all owned by Mr. Cornell. There is also faulting and Franciscan formation and it is difficult to come up with valid data. The conservation easement originally was intended to be that sort of stop gap because of the amount of water being taken offline equaled the amount of water in the project. That is why it was not required. The recapture and reuse and surplus indicates there will not be an impact and most of the water being taken out of the ground will be returned. PC-8

Commissioner Davis asked if aquifer tests were used to look at impacts on the creek, and Staff Hardy said stream gauges and baseline data could be used to analyze this, but the impact on water is the vineyard, not the winery. In this case, the winery is being analyzed, not the vineyard. If gauges had been in place 15 years ago to do baseline monitoring before the vineyards were put in, we would have better understanding of the situation. PC-9

Commissioner Davis said it sounds like there are a lot of different things going on that are creating cumulative impacts on the water level and that is her primary concern for the project. PC-10

Commissioner Shahhosseini said the idea of cumulative impacts is a concern to the BZA. When late to the game, it is unfortunate that in hindsight you see more clearly later, but we should be committed to looking at cumulative impacts and that will be the trend for the future. **Commissioner Shahhosseini** said that for the winery they have gone above and beyond what was required to mitigate the impacts and also involved considerable expense. PC-11

Commissioner Montoya concurred and said that the DEIR is adequate for the winery project. Even the experts disagree where the water is going, and it is difficult for the Board to deal with. It disturbs him to hear the stories about the fish, but the existing project can't be penalized because of it. PC-12

Commissioner Fogg said the project has been reviewed since 2003, is an extensively studied application, the EIR is complete, that he trusts the experts and the County and suggested recommending approval of the DEIR and the project to the Board of Supervisors. PC-13

Chair Liles said that written comments would be added to the record and that staff would prepare responses to comments in a final EIR. Additional comments will be taken until September 24th. The item is scheduled for the Board of Supervisors on November 20, 2012. PC-14

Action:	Public comments were received on the Draft Environmental Impact Report and staff was directed to prepare response to comments.
Appeal Deadline:	N/A
Resolution No.:	N/A

Fogg:	Montoya:	Shahhosseini:	Liles:	Davis:
Ayes:	Noes:	Absent:	Abstain:	

Minutes adopted October 11, 2012

Responses to Public Hearing Comments

The responses to the comments of each individual commenter are contained below. For ease of reference, each response corresponds to the numeric designators identified in the combined Planning Commission and Board of Zoning Adjustments Meeting Minutes.

- Kimberly Burr
- Laura Waldbaum
- Griffin Okie
- Jim Doerkson
- Commissioner Dick Fogg
- Commissioner Pam Davis
- Commissioner Komron Shahhosseini
- Commissioner Shawn Montoya
- Commission Chair Jason Liles

Commenter: Kimberly Burr

PC-1 The commenter indicates the Mark West Creek region is in critical habitat. Please see response to Comment G-1.

The commenter also comments on the process the public has been subject to. These comments do not address the adequacy of the EIR. However, these comments will be considered by the decisionmakers in making a determination whether to approve the Project. Please also see the Chapter I, Introduction, in this Response to Comments Documents which describes the environmental review process for this EIR.

PC-2 The commenter indicates that the National Marine Fisheries Service (NMFS) commented about impacts to steelhead and salmon in May 2012, and that the County is not evaluating well and grading permits adequately. The commenter also states that in 2008 scientists indicated the Russian River water resource is being impacted by approving development and is putting salmon at great risk by depleting water supplies. The commenter indicates the Project would further impact the salmon.

The Draft EIR addresses all potential Project impacts and contribution to cumulative impacts in detail, including impacts to hydrology and water quality (Section IV.C) and biological resources, including effects to aquatic species such as salmon (Section IV.D). All potential impacts would be either less than significant, or mitigated to a less than significant level with measures proposed as part of the Project, or with implementation of mitigation measures identified in the Draft EIR.

Commenter: Laura Waldbaum

PC-3 The commenter's comments are identical to those submitted in Comment Letter H. Accordingly, please see Comment Letter H, and responses to Comment Letter H in Chapter IV in this Response to Comments Document.

Commenter: Griffin Okie

PC-4 The commenter states that there used to be used to be thousands of fish at a bridge four miles downstream from Cornell Winery, but that this year the commenter counted only 50 fingerlings in Spring, and there are five left. The commenter states that there used to be swimming holes and now the creek is knee deep. The commenter also inquires where the water went.

These comments do not address the adequacy of the Draft EIR. However, the commenter is referred to the Draft EIR Chapter IV, Section C, Hydrology and Water Quality; and Section D, Biological Resources, which address all potential Project impacts and contribution to cumulative impacts to water resources and biological resources, including aquatic species. Please see also Master Response CUM-1 in Chapter II in this Response to Comments Document, which provides additional information on cumulative effects.

The commenter's comments will be considered by the decisionmakers in making a determination whether to approve the Project.

Commenter: Jim Doerkson

PC-5 The commenter states that the north and south forks of Mark West Creek were once classified as a Class 1 streams by many State agencies, and noting the Draft EIR indicates the upper reaches are intermittent due to the extraction of groundwater and that results are insignificant. However, the commenter argues the results are dramatically significant; that little or no water is left in the creek, and going through Cornell they are dry. The commenter states that this year, the Corps planted 8,000 coho salmon in his back yard as part of a restoration effort and he only has found one fish left; and the water levels are now 0.2 cubic feet per second, probably the lowest in million years.

Based on careful analysis and substantial evidence, as clearly provided in the Draft EIR, and as further supported by the discussions contained in this Response to Comments Document, the conclusion is reached that the Project would have a less-than-significant effect on groundwater and dry season base flows (Impact C.3). Based on the analyses in these impact statements, the contribution of the Project to the existing cumulative impact on surface water flows (which is described in both the Setting discussion in the Hydrology and Water Quality section and in the Biological Resources section, as well as in the discussion of Impact C.6) would not be cumulatively considerable (Impact C.6). With mitigation, the Project would not have a direct or indirect significant adverse effect on aquatic species, including but not limited to, coho salmon or steelhead (Impact D.6) or a significant cumulative effect on biological resources (Impact D.12).

The commenter also makes some comments that do not address the adequacy of the Draft EIR. These comments will be considered by the decisionmakers in making a determination whether to approve the Project.

Commenter: Commissioner Dick Fogg

PC-6 The commenter inquired if the conservation easement originally offered in the proposal has been pulled. Staff responded to this inquiry at the hearing; no additional response is necessary.

The commenter is also referred to Alternative 2B in the Draft EIR in Chapter V, Alternative in the Draft EIR, which would place a Conservation Easement similar to that previously described for the Project on the Cornell Farms 100 Wappo Road property and/or the adjacent 115 Wappo Road property.

PC-7 The commenter inquired what the zoning is on the conservation easement. Staff responded to this inquiry at the hearing; no additional response is required.

The commenter also inquired what Cornell plans to do with the new 28 acre parcel he bought that is contiguous to the Cornell Farms vineyards. The applicant's representative provided a response to this inquiry at the hearing; no additional response is required.

Commenter: Commissioner Pam Davis

PC-8 and PC-9 The commenter indicates the Waldbaum letter mentioned aquifer testing required that had not yet occurred. The commenter inquired if aquifer tests were used to look at impacts on the creek.

Staff provided a response to these comments at the hearing. The commenter is also referred to Master Response HYD-1 in this Response to Comments Document for additional information on the adequacy of the groundwater analysis in the Draft EIR; please also see response to Comment PC-10, below.

PC-10 The commenter states that there are a lot of different things going on that are creating cumulative impacts on the water level and that is her primary concern for the Project.

This comment is noted. Based on careful analysis and substantial evidence, as clearly provided in the Draft EIR, and as further supported by the discussions contained in this Response to Comments Document, the conclusion is reached that the Project would have less-than-significant Project impacts, including on hydrology and water quality and biological resources. Furthermore, based on the Project analyses, the contribution of the Project to the existing cumulative impacts would not be cumulatively considerable (Impact C.6 and D.12 in the Draft EIR). The commenter is also referred to Master Response HYD-1 in Chapter II in this Response to Comments Document for additional information regarding the adequacy of the groundwater analysis in the Draft EIR; and Master Response CUM-1, which provides additional information on cumulative impacts.

Commenter: Commissioner Komron Shahhosseini

PC-11 The commenter states the idea of cumulative impacts is a concern to the BZA; and that the County should be committed to looking at cumulative impacts and that will be the trend for the future. The commenter added that the Project has gone above and beyond what was required to mitigate the impacts and also involved considerable expense.

These comments are noted, and will be considered by the decisionmakers in making a determination whether to approve the Project. Please also see response to Comment PC-10, above.

Commenter: Commissioner Shawn Montoya

PC-12 The commenter concurred with the statements of Commissioner Shahhosseini and indicated the Draft EIR was adequate for the Project. The commenter indicated the difficulties that the BZA has contended with the issues of water, but noted the existing Project cannot be penalized because of it.

These comments are noted, and will be considered by the decisionmakers in making a determination whether to approve the Project. Please also see response to Comment PC-10, above.

Commenter: Commissioner Dick Fogg

PC-13 The commenter states the Project has been reviewed since 2003, is an extensively studied application, that the EIR is complete, and indicated support for approval of the EIR by the Board of Supervisors.

These comments are noted, and will be considered by the decisionmakers in making a determination whether to approve the Project.

Commenter: Commission Chair Jason Liles

PC-14 The commenter states that written comments would be added to the record; that staff would prepare responses to comments in a Final EIR; and that additional comments would be taken until September 24, 2012.

The commenter also noted the item is scheduled for the Board of Supervisors on November 20, 2012; this was moved to a public hearing before the Board of Supervisor on December 4, 2012.

CHAPTER V
Errata

The following corrections and changes are made to the Draft EIR and incorporated as part of the Final EIR. Revised or new language is underlined. Deleted language is indicated by ~~strikethrough~~ text. Preceding each revision **[in bolded brackets]** is a reference to the revision being the result of a staff-initiated change, or a revision that is in response to a comment received, in which the comment letter and numbers are identified in the bracket.

[E-58] The Draft EIR, Summary of the Initial Study section, page IV.A-3, third full paragraph, second sentence is revised as follows:

> "Construction activities that would generate off-site traffic would include the daily arrival and departure of construction workers, delivery of construction equipment and materials, and the off-site hauling of excess soil and construction debris."

[E-58] The Draft EIR, Summary of the Initial Study section, page IV.A-3, last paragraph, the following sentence is added to the end:

> "In addition to the truck trips presented in Table IV.A-1, the delivery of construction equipment to/from the site would result in approximately 38 truck round trips over the duration of construction schedule."

[E-58] The Draft EIR, Summary of the Initial Study section, Table IV.A-1 on page IV.A-4 is revised as shown on the following page.

[E-58, and Staff-Initiated Change] The Draft EIR, Summary of the Initial Study section, page IV.A-5, first paragraph is revised as follows:

> "~~As shown in Table IV.A-1, o~~Over the span of the construction period, and using an average truck capacity of 10 cubic yards, there would be a total of approximately 2,250~~1,750~~ truck round trips [~~(~~339~~275~~ truck round trips associated with importing material, and 1,872~~1,475~~ truck round trips associated with exporting material (see Table IV.A-1), and 38 truck round trips associated with delivery of construction equipment]~~)~~. 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 24~~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."

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)[b]	Duration (Work Days)	Material Type	Quantity (cubic yards or as shown)[b]	Duration (Work Days)	Import	Export
Establish subgrade on Wappo Road Prepare road surface for construction traffic Install water quality features	Gravel Surfacing	281~~225~~ CY	15	Excess road cut	3,861~~3,089~~ CY	22	28~~23~~	386~~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	4,791~~3,833~~ CY	15	0	479~~383~~
Soil nail wall installation at cave entrance and fire/potable water tank pad	Wall construction materials and concrete	1,301~~1,041~~ CY	22	--	--	--	130~~104~~	0
Construct rain harvest tank pad (grading and retaining walls)	Wall construction materials and pad materials	7 truck loads		Excess pad cut	173~~138~~ CY	15	7	17~~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	9,550~~7,640~~ CY	220	20	955~~764~~
Site utility trenching and pipe installation	Utility delivery and controlled density fill import	20~~3~~ truck loads		--	296~~--~~	--	20~~3~~	30~~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	0~~5~~
Wappo Road surface improvements	Gravel and asphalt concrete	684~~547~~ CY	20	--	--	--	68~~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.

[b] As a conservative approach, a swell factor of 25% percent was accounted for all excavated soil quantities, and 25% of soil from trenchwork assumed unsuitable for backfill.

SOURCE: Atterbury and Associates, 2012

[E-58, and Staff-Initiated Change] The Draft EIR, Summary of the Initial Study section, page IV.A-6, last full paragraph is revised as follows:

> "Project construction traffic would be temporary, intermittent, and dispersed throughout the day. The maximum Project construction truck trips (up to 48~~80~~ one-way trips per day over a seven week period) translates to one truck approximately every ten ~~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…"

[E-58] The Draft EIR, Summary of the Initial Study section, page IV.A-9, last full paragraph is revised as follows:

> "…Based on the CalEEMod estimates (provided in Appendix AQ), Project construction would result in average emissions of approximately 7~~6~~ pounds per day of reactive organic gases (ROG), 53.86~~50~~ pounds per day of oxides of nitrogen (NO_x), and 3 pounds per day of particulate matter (PM_{10} 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 PM_{10}. 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."

[E-58, and Staff-Initiated Change] IV.A-14, last full paragraph is revised as follows:

> "During the construction phase with the peak off-site truck traffic, as many as 24~~40~~ daily truck round trips would be expected over a period of approximately seven weeks. This peak construction phase would result in approximately six~~ten~~ one-way truck trips per hour. Using the Traffic Noise Model of the Federal Highway Administration, these peak daily truck trips would contribute 53.5~~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 results in roadside noise levels of 55.1~~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 increases from Project construction truck traffic would be even less, and similarly less than significant."

[E-58] The Draft EIR, Summary of the Initial Study section, page IV.A-12, first full paragraph is revised as follows:

> "…Project construction-generated GHG emissions were estimated by Rimpo and Associates to be approximately 116~~94~~ metric tons per year of carbon dioxide equivalents (eCO_2) during the first year of construction and 90~~81~~ metric tons of eCO_2 in the second year of construction."

[E-58] The Draft EIR, Summary of the Initial Study section, page IV.A-12, third full paragraph is revised as follows:

> "Considered together, the total maximum construction GHG emissions would up to 476~~454~~ metric tons per year of carbon dioxide equivalents (eCO_2). 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."

[E-58] The Draft EIR, Appendix AQ – Air Quality, page AQ-3, and pages AQ-7 through AQ-33, are replaced in the Revised Appendix AQ in this Response to Comments Document.

[Staff-initiated Change] The Draft EIR, page IV.D-22, second paragraph, third sentence, of the Draft EIR is revised as follows:

> "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*;* F. Gardipee, USFWS, 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)."

APPENDIX AQ
Air Quality

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Calculation of Average Daily Emissions

Project: Cornell Winery

Year: 2013

	ROG	Nox	PM10	PM2.5	
Annual Emissions from CalEEMOd (tons/yr) =	0.62	5.09	0.24	0.24	
(pounds/yr) =	1240	10180	480	480	
Work days in 2013 = 189					
assumes 9 months; 21 days per month					
Average daily emissions =	**6.56**	**53.86**	**2.54**	**2.54**	**(pounds/day)**

Year: 2014

	ROG	Nox	PM10	PM2.5	
Annual Emissions from CalEEMOd (tons/yr) =	0.76	5.15	0.29	0.29	
(pounds/yr) =	1520	10300	580	580	
Work days in 2013 = 210					
assumes 10 months; 21 days per month					
Average daily emissions =	**7.24**	**49.05**	**2.76**	**2.76**	**(pounds/day)**

Cornell Winery

Sonoma-San Francisco 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)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	75		

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 reduced 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.

AQ-4

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
2,250 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 for 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	0.62	5.09	3.35	0.01	18.20	0.24	18.44	0.51	0.24	0.75						
2014	0.76	5.15	3.67	0.01	13.66	0.29	13.95	0.51	0.29	0.81						
Total	**1.38**	**10.24**	**7.02**	**0.02**	**31.86**	**0.53**	**32.39**	**1.02**	**0.53**	**1.56**						

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	0.62	5.09	3.35	0.01	0.93	0.24	1.17	0.51	0.24	0.75						
2014	0.76	5.15	3.67	0.01	0.92	0.29	1.22	0.51	0.29	0.81						
Total	**1.38**	**10.24**	**7.02**	**0.02**	**1.85**	**0.53**	**2.39**	**1.02**	**0.53**	**1.56**						

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	0.09	0.56	0.00	0.07	0.00	0.07	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**	**0.09**	**0.56**	**0.00**	**0.07**	**0.00**	**0.07**	**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	0.09	0.56	0.00	0.07	0.00	0.07	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**	**0.09**	**0.56**	**0.00**	**0.07**	**0.00**	**0.07**	**0.00**	**0.00**	**0.01**						

AQ-8

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**						

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**						

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	0.16	1.53	1.10	0.00	17.27	0.05	17.32	0.01	0.05	0.06						
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	0.10	0.00	0.01	0.00	0.01	0.00	0.00	0.00						
Total	**0.17**	**1.54**	**1.20**	**0.00**	**17.28**	**0.05**	**17.33**	**0.01**	**0.05**	**0.06**						

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	0.16	1.53	1.10	0.00	0.01	0.05	0.06	0.01	0.05	0.06						
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	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	**0.17**	**1.54**	**1.20**	**0.00**	**0.01**	**0.05**	**0.06**	**0.01**	**0.05**	**0.06**						

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	0.10	1.01	0.73	0.00	12.73	0.03	12.76	0.01	0.03	0.04						
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	**0.11**	**1.02**	**0.80**	**0.00**	**12.74**	**0.03**	**12.77**	**0.01**	**0.03**	**0.04**						

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	0.10	1.01	0.73	0.00	0.01	0.03	0.04	0.01	0.03	0.04						
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	**0.11**	**1.02**	**0.80**	**0.00**	**0.01**	**0.03**	**0.04**	**0.01**	**0.03**	**0.04**						

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	0.31	1.65	1.25	0.00		0.11	0.11		0.11	0.11						
Total	**0.31**	**1.65**	**1.25**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**						

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	0.31	1.65	1.25	0.00		0.11	0.11		0.11	0.11						
Total	**0.31**	**1.65**	**1.25**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**						

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**						

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	0.09	0.56	0.37	0.00		0.05	0.05		0.05	0.05						
Paving	0.00					0.00	0.00		0.00	0.00						
Total	**0.09**	**0.56**	**0.37**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**						

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	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00						
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.01**	**0.00**	**0.01**	**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	0.09	0.56	0.37	0.00		0.05	0.05		0.05	0.05						
Paving	0.00					0.00	0.00		0.00	0.00						
Total	**0.09**	**0.56**	**0.37**	**0.00**		**0.05**	**0.05**		**0.05**	**0.05**						

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	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Total	**0.00**	**0.00**	**0.04**	**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	0.09	0.56	0.00	0.07	0.00	0.07	0.00	0.00	0.01						
Unmitigated	0.06	0.09	0.56	0.00	0.07	0.00	0.07	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

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	40.05	40.05	40.05	150,517	150,517
Total	40.05	40.05	40.05	150,517	150,517

4.3 Trip Type Information

	Miles			Trip %		
Land Use	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	1.56578	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	tons/yr										MT/yr					
User Defined Recreational	1.56578	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

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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

APPENDIX E

Comment Letter E, Exhibit E.A Appendix

Comment Letter E, Exhibit E.B Appendix

Comment Letter E, Attachment E.1

Comment Letter E, Attachment E.2

Comment Letter E, Attachment E.3

Comment Letter E, Attachment E.4

Comment Letter E, Attachment E.5

Comment Letter E, Attachment E.6

Comment Letter E, Attachment E.7

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APPENDIX

1. Board for Geologists And Geophysicists inquiry regarding possible substandard practice to RGH dated September 15, 2005.

2. Board for Professional Engineers and Land Surveyors Re. Complaint No.: CG 2009-13 dated December 13, 2010

STATE OF CALIFORNIA - STATE AND CONSUMER SERVICES AGENCY Arnold Schwarzenegger, Governor

BOARD FOR GEOLOGISTS AND GEOPHYSICISTS
2535 CAPITOL OAKS DRIVE, SUITE 300A, SACRAMENTO, CA 95833-2926
TELEPHONE: (916) 263-2113
FAX: (916) 263-2669
E-mail: geology@dca.ca.gov
Website: www.dca.ca.gov/geology

September 15, 2005

Messrs. Neal Mace and Gary Russey
RGH Environmental
1305 North Dutton Avenue
Santa Rosa, CA 95401

Dear Messrs. Mace and Russey

Subject: Compliance with Business and Professions Code Section 7800 et seq. (Geologist and Geophysicist Act)

The Board for Geologists and Geophysicists (Board) is responsible for regulating the practice of geology and geophysics in the state of California. The Board's mission is to continuously enhance the quality, significance and availability of geological and geophysical services offered to the people of California. The Board's goal is to protect the health, safety and welfare of California consumers who utilize the services of geologists and geophysicists.

The Board has received a complaint against you regarding your geologic report, dated July 15, 2005, characterizing the extent and quality of ground water resources for a proposed winery at 420 Wappo Road in Sonoma Country California.

Pursuant to Title 16, California Code of Regulations section 3063, the Board for Geologists and Geophysicists is authorized to issue citations containing an order of abatement or an administrative fine against a professional geologist, geophysicist, or certified specialist who has committed any act or omission which constitutes a violation of the Geologist and Geophysicist Act or regulations. An order of abatement requires the cited person to cease the violation. Where appropriate, an administrative fine may be assessed which requires the cited person to pay a monetary fine of up to $2,500.00.

Section 7860 of the Business and Professions Code empowers the board to investigate the professional actions of any Professional Geologist and make findings thereon. In part, Section 3065 of Title 16, California Code of Regulations (CCR) states:

> "A violation of any of the following professional standards in the practice of geology or geophysics constitutes a ground for disciplinary action:
> (a) Competence:
> (1) A geologist or geophysicist shall undertake to perform professional services only when he or she, together with those whom the registrant may engage as consultants, are qualified by education, training, and experience in the specific technical and

scientific areas involved. (2) When practicing geology or geophysics, a registrant shall act with competence and reasonable care and shall apply the technical knowledge and skill which is ordinarily applied by registrants of good standing, practicing in this state under similar circumstances and conditions.

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(c) Conflict of Interest:

(1) A registrant shall not concurrently engage in any other business of occupation which impairs the registrant's independence, objectivity, or creates a conflict of interest in rendering professional services. (2) A registrant shall not accept compensation for services from more than one party on a project unless the circumstances are fully disclosed and agreed to by all such parties. Such disclosure and agreement shall be in writing. (3) If a registrant has any business association or financial interest which is substantial enough to influence his or her judgment in connection with the performance of professional services, the registrant shall fully disclose in writing to his or her client(s) or employer(s) the nature of the business association or financial interest. If the client(s) or employer(s) object(s) to such association or financial interest, the registrant shall either terminate such association or interest or offer to give up the project or employment. (4) A registrant shall not solicit or accept payments, rebates, refunds or commissions whether in the form of money or otherwise from material or equipment suppliers in return for specifying their products or services to a client or employer of the registrant.

Therefore, a licensee's professional services that fail to meet the standard of care of a competent Professional Geologist operating under similar circumstances in this state is subject to disciplinary action by the Board. The report presented to the Board indicate that you may be practicing geology under the standard of care of a competent Professional Geologist relating to the proposed winery project at the subject site.

The Board will not take further action on this case at this time as the internal report review dialogue with the Solano County Planning Department has not been finalized. Please submit written confirmation that you are in compliance with the terms of the Act and the Board's Regulations presented herein within 20 days of receipt of this notice.

A copy of the Geologist and Geophysicist Act and Rules and Regulations is posted on the Board's website at www.dca.ca.gov/geology. If you need more information, clarification or have any other questions, please call George Dunfield, the Board's Enforcement Manager, at (916) 263-0341

Sincerely,

PAUL SWEENEY
Executive Officer

cc: Mr. Gary Duke, Department of Consumer Affairs, Legal Office
Ms. Sigrid Swedenborg, Solano County Planning Department

STATE OF CALIFORNIA - STATE AND CONSUMER SERVICES AGENCY ARNOLD SCHWARZENEGGER, Governor

BOARD FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS
2535 Capitol Oaks Drive, Suite 300, Sacramento, CA 95833-2944
Telephone: (916) 263-2222 Toll Free: 1-866-780-5370
Facsimile: (916) 263-2246
www.pels.ca.gov

December 13, 2010

Casey Caplinger
7768 St. Helena Road
Santa Rosa, CA 95404

RE: Complaint No.: CG 2009-13

Dear Mr. Caplinger:

This letter is being sent regarding the complaint you filed against Jared Pratt alleging violations of Business and Professions Code Section 7860(b)(3) regarding his professional work related to a report entitled, "Preliminary Geologic Study Report," dated May 31, 2006 (updated April 22, 2008) for the Cornell Winery project located at 245 Wappo Road in Santa Rosa, California (APN 028-260-041).

As part of our investigation, the Geologists and Geophysicists Program of the Board for Professional Engineers and Land Surveyors had an independent technical expert review all of the information we received and provide us with his opinion of Mr. Pratt's practices as they related to these allegations. Our technical expert opined that the extent of detailed geologic investigation to be conducted on a project is not entirely the decision of the geologist performing the work. The scope of services to be performed is the decision of the client, which, in this case, is the County of Sonoma.

Therefore, the allegations of incomplete analysis do not appear to be applicable to Mr. Pratt with respect to this project. Additionally, the allegations of inadequacy of Mr. Pratt's work pertaining to landslide issues also cannot be considered to be applicable to this complaint as it may be addressed at a later phase of development.

However, our technical expert did express concern regarding Mr. Pratt's depiction of groundwater effects, or lack of consideration of groundwater effects as exposed in at least two subsurface explorations within a slide mass. Mr. Pratt has been notified of our expert's opinion concerning his geologic work on this project.

The Geologists and Geophysicists Program has now closed this case. If you have any questions, you may contact me by telephone at (916) 263-1846 or by e-mail at Corrine.Gray@dca.ca.gov.

Sincerely,

Corrine Gray
Enforcement Analyst

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APPENDIX

1. Sonoma County PRMD requirements for investigation of water availability in Zone 3 and Zone 4 "Water scarce" areas.

2. Board for Geologists And Geophysicists inquiry regarding possible substandard practice to RGH dated September 15, 2005.

3. Email correspondence between Raymond Waldbaum and Jon Tracy concerning exemptions from water availability investigation and testing.

4. Jon Tracy review of geologic report of water availability (apparent unlicensed practice of geology)

COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT
2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 565-1900 FAX (707) 565-1399

COVER SHEET

FAX

To: Ray
From: Jonathan Tracy, Direct telephone: 565-1683
Fax #: 539-5773
Subject: WR-2e
Date: 6-3-09
Pages: 2

COMMENTS:

FAXED HERE BY JOY TRACY 6-3-09

monitoring program, establish additional monitoring requirements for other new wells.*

Policy 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.*

Policy WR-2f: Require that discretionary projects in Urban Service Areas maintain the site's pre-development recharge of groundwater to the maximum extent practicable. Develop voluntary guidelines for rural development that would accomplish the same purpose.*

Policy WR-2g: In cooperation with Sonoma County Water Agency (SCWA), DWR, and other public agencies and well owners, support the establishment and maintenance of a system of voluntary monitoring of wells throughout the county, utilizing public water system wells and private wells where available. Encourage participation in voluntary monitoring programs, and, if funds are available, consider funding of well monitoring where determined necessary in order to stimulate participation.*

Policy WR-2h: In cooperation with SCWA, DWR and other public agencies, support the establishment and maintenance of a groundwater data base from available application data, well tests, monitoring results, study reports and other sources; analyze the data collected in an annual report to the Board; provide the data to DWR; and use the data along with other available information to refine the mapping of groundwater availability classifications. Protect the proprietary nature of well drilling data and release it only in summary form.*

Policy WR-2i: In order to identify areas where groundwater supplies may be declining, in the annual report review well permit data, monitoring data and reported problems and recommend to the Board of Supervisors areas where comprehensive groundwater studies are needed. As part of the first annual report, consider the recommendations of the recently completed groundwater studies in the Joy Road, Mark West Springs, and Bennett Valley areas, as well as the Sonoma Valley Groundwater Management Plan. In each such special study area that is approved by the Board following a public hearing, develop a comprehensive groundwater assessment that includes the following:

(1) An existing system of monitoring wells and stream gauges;

(2) Locations of water wells,

Footnote: *Mitigating Policy

Permit and Resource Management Department
POLICY AND PROCEDURE Number 9-2-28

Well Pump Test Guidelines in Water Scarce Areas

PURPOSE

These Guidelines will apply to well pump tests performed for the purpose of demonstrating compliance with minimum water quantity requirements of the Sonoma County Code for residential construction in water scarce areas or second dwelling units in marginal water availability areas of Sonoma County.

GENERAL

Pump tests conducted on or after the effective date of this policy will remain valid for a period of 3 years or as long as aquifer conditions remain substantially the same as established by a Registered Geologist or Registered Civil Engineer. [Grandfather clause: Pump tests accepted by the County prior to this Policy's initial implementation date of 06-08-04 will remain valid for 3 years from the date of the test.]

AUTHORITY

Sections 7-12, 25-17, 25-56 and 26-88-060H of the Sonoma County Code.

DEFINITIONS

"Discharge rate" means the rate at which the well discharges water (usually expressed in gallons per minute).
"Draw down" means the difference measured in feet between the static and dynamic water levels.
"Dynamic water level or stabilized pumping level" means the level of water in the well during the pump test.
"Post-test static water level" means the level of water seventy-two hours after the pump test.
"Recovery" means the difference in feet between the post test static water level and the pumping level (dynamic water level)
"Specific capacity" means the discharge rate divided by the draw down (usually expressed as gallons per minute per foot of draw down).
"Static water level" means the level of water in the well before the pump test.

PROCEDURE

A. Pump Test Requirements

1. General Conditions

   The Sonoma County Code requires demonstration of at least one gallon per minute per dwelling unit for new or replacement dwellings located in water scarce areas and for

second dwelling units in marginal water availability areas. The code specifies a sustained yield, metered pump test from a well or wells for a specified time period of 8-12 hours for water systems with 1-2 connections, 16-24 hours for water systems with 3-4 connections and 72 hours for systems with 5 or more connections. The 72 hour test may be modified by the administrative authority but in no case shall be less than 48 hours. Note: Also refer to Section 64563 of the California Code of Regulations for systems with 5 or more connections.

Testing to meet the above yield requirements shall be conducted from July 15 to October 1 each year or as extended by the Project Review and Advisory Committee. This time period is referred to as the dry weather pump test period. The Permit and Resource Management Department shall be notified 24 hours in advance of any testing. Pump tests may be performed by or under the direction of a licensed drilling contractor (C57), pumping contractor (C61/D21), a Registered Civil Engineer or a Registered Geologist.

2. A copy of the previously completed State of California Department of Water Resources Well Completion Report, if available, shall be submitted with the completed Permit and Resource Management Department's form, Certification of Water Yield in Water Scarce Areas - WLS-010.

3. If multiple wells are being used to meet the minimum water production requirements, then all wells must be pumped simultaneously.

B. Pre-Test Requirements

1. Identify the location of the well, by either the NAD83 California State Plane II or WGS 84 lat./long. or by the measured distance reference to a fixed landmark. Record this information on the WLS-010 form. Include the estimated elevation of the well head.

2. Measure and record the static (non-pumping) water level in the well. If well is operational, so note on the WLS-010 form. Provide information on measuring points (top of casing, surface seal, access port, etc.) Measurements should be taken relative to ground level. The measuring point above ground level should be measured and noted on the WLS-010 form. In order to establish the static level, the well must not be pumped for at least 12 hours prior to measurement of the static water level.

3. Record the type of discharge measurement method. Indicate the type and model of flow meter or provide an accurate description of weir or orifice plate set up.

C. Twelve-Hour Pump Test Method

1. Record the static level.

2. Calculate the volume of water stored in the well.

3. Remove a volume of water equivalent to the calculated volume stored in the well.

4. Select a dynamic water level for the test. Lower the water level to the selected dynamic water level as quickly as possible. Maintain the dynamic water level for the duration of the test by adjusting the discharge rate. Pump at a rate of no less than one gallon per minute and continue pumping for twelve hours.

5. If it is not feasible to use a water level sensing device (probe), a stable pumping rate must be maintained for a period of 3 hours prior to the start of the sustained yield test. This condition may require pulling the pump to determine the static water level prior to conducting the test, reinstalling the pump to conduct the test, and pulling the pump again to read the 72 hour recovery.

6. If a low water yield pump protector device is used and the dynamic water level is not established above the pump setting, the dynamic water level will be assumed to be at the pump.

7. Record the dynamic water level and discharge rate according to the following schedule:

Time since pumping began (including pumping to remove stored volume)	**Time Interval**
0-5 minutes	1 minute
5-60 minutes	5 minutes
60-100 minutes	20 minutes
100 minutes to establish the dynamic water level	30 minutes

Once the stabilized dynamic water level has been reached for a minimum period of 3 hours, the water level must be read a minimum of every 12 hours to the end of the test.

8. At the end of the pumping test, measure, and record the final discharge rate and dynamic water level.

D. Alternative Eight-Hour Pump Test Method

1. An alternative eight-hour pump test method can be used instead of the twelve-hour pump test method for systems of 1 or 2 connections if, after 4 hours of pumping, the specific capacity is greater than 0.05. While conducting the alternative eight-hour pump test the dynamic water level and discharge rate are to be recorded in accordance with the time intervals specified in Section C above.

E. Alternative Sixteen-Hour Pump Test Method

1. An alternative sixteen-hour pump test method can be used instead of the twenty-four hour pump test method for systems of 3 or 4 connections if, after 4 hours of pumping, the

specific capacity is greater than 0.05. While conducting the alternative sixteen-hour pump test the dynamic water level and discharge rate are to be recorded in accordance with the time intervals specified in Section C above.

F. Post Test Measurement

1. Measure and record the static level in the well seventy-two (72) hours after the final dynamic water level measurement.

G. Calculate the Well Recovery

1. Determine the water level draw down by subtracting the initial static water level measurement from the stabilized dynamic pumping level. Record this result as the well draw down.

2. Next determine the water level recovery by subtracting the post test (72 hour) static water level from the stabilized dynamic pumping level. Record this result as the well recovery.

3. Next determine the percent recovery of the well. Divide the water level recovery by the water level draw down and multiply by 100. Record this result as the percent well recovery.

Example:

a. Initial static water level: _____ (Measured value)

b. *Post test static water level: _____ (Measured value)

c. **Stabilized Pumping level: _____ (Measured value)

d. Draw down: _____ (Calculate by subtracting A from C)

e. Recovery: _____ (Calculate by subtracting B from C)

f. Percent recovery: _____ (Calculate by dividing E by D and multiplying the results by 100)

Well percent recovery (F) must be 90% or greater within a 72 hour period.

* The static water level after 72 hours or less post pump test.
** Kleinfelder refers to this as the dynamic pumping level.

ATTACHMENTS

Permit and Resource Management Department
POLICY AND PROCEDURE **Number 9-2-28**

None

Approved by:

Pete Parkinson, Director

Lead Author: Kleinfelder Associates

Revisions:
06-08-04 03/25/05
07-13-04
09-02-04

☐ Make available on Intranet only ☒ Make available on Intranet and Internet

PROCEDURE FOR IMPLEMENTING GENERAL PLAN POLICY RC-3h

Policy RC-3h:

Require proof of adequate groundwater in Class III and IV water areas. Require test wells or the establishment of community water systems in Class IV water areas. Test wells may be required in Class III water areas. Deny discretionary applications unless a geologic report establishes that groundwater supplies are adequate and will not be adversely impacted by the cumulative amount of additional development. (page 217, Sonoma County General Plan)

Implementation Procedure:

1. This procedure applies to **discretionary** (e.g., subdivisions, use permits) and **not to ministerial** (e.g., building permits, septic system permits) projects.

2. The official maps for determining whether a site is in a Class I, II, III, or IV groundwater availability area are those in the General Plan Resource Conservation Element.

3. The requirements of the fourth sentence in RC-3h are: 1) adequate on-site groundwater supplies must be available for a proposed use, and, 2) the current and future usage of groundwater supplies in the project area will not likely affect or be affected by the project.

4. Evidence that the requirements of #2 above have been met must be provided to the decision-making body **prior to** its discretionary decision. To meet this requirement, a geologic report (see 6c. below) shall be prepared prior to the public hearing on the project. Test wells may be a **condition** of project approval in Class III water availability areas if there are substantial questions as to the availability of groundwater by the geologist's report. Test wells are required in Zone IV water areas by Sections 7-12 and 25-179 of the Sonoma County Code.

5. The determination whether or not cumulative impacts have been adequately addressed in the geologic report will be based upon joint review by the Registered Environmental Health Specialist (REHS) who responds to the project referral and the Planner, as part of preparing the project's Initial Study. If cumulative impacts of the mutually agreed upon impact area (see 6c.2) below) are not adequately addressed, the project would be inconsistent with the General Plan.

6. The procedure which is to be utilized for discretionary projects is similar to the Expanded Initial Study process presently in use for addressing geologic, noise, archaeology and other technical issues. This procedure is as follows:

    a. Initial Study will identify whether the project site is in a Class III or IV area;

    b. In most cases, the REHS referral will review the need for preparation of a geologic report to provide the information necessary to determine that there are adequate existing and future groundwater supplies both on-site and in the impact area. In some cases, staff may be able to make these findings using existing data on file, in which case a new geologic report will not be necessary;

SONOMA COUNTY GROUNDWATER STUDIES CHECKLIST (DEC. 2003)

	Compliance With Guidelines	Yes	No
1.	Was the report was prepared by a Registered Geologist, Certified Engineering Geologist or Certified Hydrogeologist		
2.	Is the impact area identified in the report consistent with that mutually agreed on by the geologist, the REHS, and the Planner?		
3.	Are geologic formations correctly identified and delineated on a map?		
4.	Does the map have a scale and reference points?		
5.	Is the type of aquifer identified and described?		
6.	Is a geologic cross section included?		
7.	Are well depths in the area documented?		
8.	Is the yield of wells in the area known and well documented?		
9.	Was an effort made to learn of well failures or unsuccessful attempts to develop water in the impact area?		
10.	Is this effort well documented?		
11.	Were local property owners consulted?		
12.	Were well drillers contacted?		
13.	Is a water balance provided?		
14.	Is storage capacity calculated?		
15.	Is the water in storage calculated for the impact area?		
16.	Are the methods used described?		
17.	Are the calculations shown?		
18.	Does the report discuss current quantities and projected (cumulative) quantities of groundwater pumped?		
19.	Have other RC-3h reports been conducted in the area?		
20.	Is this report consistent with those reports?		
21.	Does the report discuss impacts to surface waters and aquatic habitat?		

	The report indicates that:	
22.	The size of the cumulative impact area (acres)	
23.	The size of the project property (acres)	
24.	Proposed annual use (acre-feet)	
25.	Depth of proposed well (Feet)	
26.	Estimated annual use by others in the cumulative impact area (acre-feet)	
27.	Number of active wells in the cumulative impact area	
28.	Average depth of wells in cumulative impact area (feet)	
29.	Average distance to nearest well (feet)	
30.	(P) Average annual rain fall (tenths of a foot):	
31.	(ETo) is lost to evapotransporation (tenths of a foot):	
	(Qout) % runs off:	

STATE OF CALIFORNIA - STATE AND CONSUMER SERVICES AGENCY Arnold Schwarzenegger, Governor

BOARD FOR GEOLOGISTS AND GEOPHYSICISTS
2535 CAPITOL OAKS DRIVE, SUITE 300A, SACRAMENTO, CA 95833-2926
TELEPHONE: (916) 263-2113
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September 15, 2005

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RGH Environmental
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Santa Rosa, CA 95401

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(1) A registrant shall not misrepresent nor permit the misrepresentation of his or her professional qualifications, affiliations, or purposes or those of the institutions, organizations or other businesses with which he or she is associated. (2) A registrant may advertise or solicit for any services for which he or she is authorized by registration provided such services are within his or her field of competence. (3) A registrant shall accurately represent to a prospective or existing client or employer his or her qualifications and the scope of his or her responsibility in connection with projects or services for which he or she is receiving or will receive compensation. (4) A registrant shall only express professional opinions that have a basis in fact or experience. (5) A registrant shall not plagiarize the professional work of others and shall attribute proper credit to others for their work or contribution. (6) A registrant shall not knowingly permit the publication or use of his or her data, reports or maps for unlawful purposes. (7) A registrant shall not falsely or maliciously attempt to injure or in fact injure the reputation or business of others. (8) A registrant shall not misrepresent data and its relative significance in any geologic or geophysical report.

(c) Conflict of Interest:

(1) A registrant shall not concurrently engage in any other business of occupation which impairs the registrant's independence, objectivity, or creates a conflict of interest in rendering professional services. (2) A registrant shall not accept compensation for services from more than one party on a project unless the circumstances are fully disclosed and agreed to by all such parties. Such disclosure and agreement shall be in writing. (3) If a registrant has any business association or financial interest which is substantial enough to influence his or her judgment in connection with the performance of professional services, the registrant shall fully disclose in writing to his or her client(s) or employer(s) the nature of the business association or financial interest. If the client(s) or employer(s) object(s) to such association or financial interest, the registrant shall either terminate such association or interest or offer to give up the project or employment. (4) A registrant shall not solicit or accept payments, rebates, refunds or commissions whether in the form of money or otherwise from material or equipment suppliers in return for specifying their products or services to a client or employer of the registrant.

Therefore, a licensee's professional services that fail to meet the standard of care of a competent Professional Geologist operating under similar circumstances in this state is subject to disciplinary action by the Board. The report presented to the Board indicate that you may be practicing geology under the standard of care of a competent Professional Geologist relating to the proposed winery project at the subject site.

The Board will not take further action on this case at this time as the internal report review dialogue with the Solano County Planning Department has not been finalized. Please submit written confirmation that you are in compliance with the terms of the Act and the Board's Regulations presented herein within 20 days of receipt of this notice.

A copy of the Geologist and Geophysicist Act and Rules and Regulations is posted on the Board's website at www.dca.ca.gov/geology. If you need more information, clarification or have any other questions, please call George Dunfield, the Board's Enforcement Manager, at (916) 263-0341

Sincerely,

PAUL SWEENEY
Executive Officer

cc: Mr. Gary Duke, Department of Consumer Affairs, Legal Office
Ms. Sigrid Swedenborg, Solano County Planning Department

Subj: **RE: Water availability**
Date: 12/14/2011 8:02:50 A.M. Pacific Standard Time
From: Jon.Tracy@sonoma-county.org
To: RWaldbaum@aol.com

Hi Ray,

There are three different regulatory documents that apply to development in Sonoma County groundwater scarce areas:

1. The General Plan says that discretionary projects in Class 3 and 4 areas will do a groundwater study, and that the procedure for doing the study shall consider the expense of the study in relation to the water needs of the project.

So far we have not interpreted that to mean that no evaluation at all is required. Instead, where the parcels are large (about 100 acres or larger) and the projects are small, say a 15,000 case winery or smaller, we have accepted a letter from a California Registered Geologist explaining that there is little to no likelihood that this project in this setting could have an adverse impact on the neighboring water supply.

The very few exceptions where the study has been waived in total are situations where it is highly unlikely that there would be any drilling in a groundwater scarce area. For example, we waived a groundwater study for a major subdivision of about 250 acres just east of Windsor. About one and one half acres are in class 3 groundwater scarce area with the rest of the project being a class 1 area. It is highly unlikely that an owner would drill in the steep water scarce area when there is so much gently rolling to flat topography class 1 area available for the project to drill in.

2. The Zoning Code requires a pump test for second dwelling units in a class 3 area and a pump test and a groundwater study in class 4 areas.

Up until now, Connie Stavros has read the groundwater studies for second dwelling units so I do not know exactly what she has been doing.

3. The Building Code requires a pump test for any new or replacement dwelling in a class 4 area.

Jon Tracy

From: RWaldbaum@aol.com [mailto:RWaldbaum@aol.com]
Sent: Tuesday, December 13, 2011 5:39 PM
To: Jon Tracy
Subject: Water availability

Jonathan, in Class 3 and 4 water areas are the requirements for water availability investigations waived by PRMD on the basis of cost to the developer? In other words, can a developer refuse to do the investigations and tests ordinarily required by PRMD because the developer believes that the costs will be too high and still receive project approval?

Thank you.

Ray Waldbaum PG 3142 CEG 923
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Subj: **RE: Water availability**
Date: 12/14/2011 9:23:39 A.M. Pacific Standard Time
From: Jon.Tracy@sonoma-county.org
To: RWaldbaum@aol.com

Policy 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.*

From: RWaldbaum@aol.com [mailto:RWaldbaum@aol.com]
Sent: Wednesday, December 14, 2011 8:38 AM
To: Jon Tracy
Subject: Re: Water availability

Jon, thanks for the quick reply.

What is the actual language in the general plan that exempts developers from doing a water availability investigation?

As you well know, some consultants will say anything they are paid to say without regard to what is actually true. What safeguards are in place to verify statements that everything is rosy?

The project I'm inquiring about is the Cornell winery on St. Helena Rd., as you may have already guessed. Various geologic and geotechnical consultants have been "investigating" that site for 11 years and they still haven't got it right, as evidenced by a very recent geologic and geotechnical review of local consultant RGH by out of area geologic and geotechnical consultant Cotton-Shires of Los Gatos. Dave Hardy has that recent Cotton-Shires review. It says almost exactly what I said in reviewing the same report Cotton-Shires reviewed.

The developer's consultants appear to be in denial about the landslide hazards on the site, including a 10,000 cubic yard active monster (according to NCRWQCB), and the fact that next door neighbor Pride Winery is still trucking in water even though the growing season is over. It is my understanding from Weeks Drilling personnel that Pride has 5 continuously pumping wells that are insufficient for Pride's operation but have had a devastating effect on the once, but no longer, spring fed Mark West Creek.

Ray
=

Subj: **RE: Water availability**
Date: 12/15/2011 2:49:05 P.M. Pacific Standard Time
From: Jon.Tracy@sonoma-county.org
To: RWaldbaum@aol.com

Hi Ray,

This discussion is not getting anywhere because we have different concepts of how this process is supposed to work. You keep asking about a written exemption from doing a groundwater study for the Cornell Winery project. Given the fact that I have already read two groundwater studies by two different geologists for this project, I do not believe that an code exemption from doing the groundwater study is relevant question. I believe that the determination that Dave Hardy made was that a third groundwater study was not required.

Jon Tracy

From: RWaldbaum@aol.com [mailto:RWaldbaum@aol.com]
Sent: Thursday, December 15, 2011 8:34 AM
To: Jon Tracy
Subject: Re: Water availability

Hi Jon:

We are still trying to determine whether there is a written policy in place that would exempt a developer in a "Water Scarce" area from doing County-required water availability work based solely on an objection to the cost of the cost of the work.

Based on my 12 years of employment as a county geologist in another county and as a consulting geologist for over 30 years, either the exemption exists or it does not. If it does exist, can you please tell me where it is stated?

It is difficult to imagine that such an exemption exists because it would imply that any expensive investigation, for example a landslide investigation, is an undue hardship on the developer and therefore development on uninvestigated unstable slopes is OK and not a violation of the public's trust in building officials to only approve projects proven to be safe.

Thanks!

Ray Waldbaum
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COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 565-1900 FAX (707) 565-1103

August 17, 2004

RGH Geotechnical and Environmental Consultants-Neal Mace
1305 North Dutton Ave.
Santa Rosa CA 95401

SUBJECT Groundwater Study for:

File Number:	UPE03-0092
Applicant Name:	W. Guy Davis
Owner Name:	Henry Cornell
Site Address:	420 Wappo Rd, Santa Rosa
A.P.N.	028-260-047

Request for a Use Permit for a winery with a maximum annual production capacity of 20,000 cases with caves, and tasting by appointment only on 93.56 acres. The permit will come in two phases. At the completion of Phase 1 the winery will produce 10,000 cases per year and at the end of Phase 2, it will be up to 20,000 cases.

Dear Mr. Mace,

In November of 2003, the Sonoma County Board of Supervisors approved recommendations made by Kleinfelder (under contract) to improve groundwater studies. In December of 2003, this Department began using the Kleinfelder checklist to evaluate groundwater studies (copy enclosed). The groundwater study submitted for this site (dated July 15, 2004) is being accepted and I anticipate that there will be minimal comment to the client. This site is atypical due to severe topography, large parcel size, and the location of the water wells upon the ridge. Important aspects were not included in this report. Some of what is justifiably omitted from this report is also worth including in discussion for application to future reports

Basics

1. Geology Map of the Site: Even when a site is all Franciscan formation, it is still noteworthy to show sandstone/greenstone members vs shale or serpentine members.

2. Geologic Cross Section: Again, even when a site is composed of one formation, geologic structure could be portrayed that may have a bearing on the water supply situation. This is especially appropriate when topographical relief exceeds the depth of the water wells located on the ridge.

3. Calculation (or estimation) of the storage capacity of the aquifer: Granted this is not straightforward in fracture-flow aquifers, but there are zone 4 cases where potential recharge exceeds storage capacity by a very large amount. If groundwater storage capacity is not sufficient to support the project for the entire annual hydrologic cycle, then the project is too large

4. Water use by wineries: It is highly misleading to present water use by wineries as just wastewater flows during crush. Additional water use may include landscape irrigation, barrel washing, bottling, on-site testing associated with wine making, and day-to-day cleaning and maintenance

Items Requiring Further Discussion in the Report:

5. Documentation of verbal evidence gathering: When conversations with water well drillers, pump contractors, nearby property owners, water delivery companies etc. are conducted concerning dry holes, wells that have gone dry, wells that have continued in acceptable production, the trucking of water supplies, etc, please mention that this information was collected in your report.

6 Cumulative groundwater impacts: Projecting future development is a very uncertain exercise, so I can sympathize with the impulse to omit this topic. We would like to see future projections and estimates based upon uses that are granted by right in the Sonoma County General Plan, and that are already occurring in the neighborhood of the project for inclusion in the water balance. We strongly encourage you to visit the PRMD lobby to review the General Plan maps that are posted there and talk to a planner regarding what development may occur by right in the vicinity of the project.

7 Impacts to surface waters and aquatic habitat: Given the well locations and the topography of this particular site, I do not think that there will be an impact due to groundwater extraction. However, it is your professional opinion that is required in this regard.

8 Well Interference: I am very encouraged to see the effort to estimate-calculate this impact included in this report. However, the discussion is incomplete: A) I am under the impression that the well is currently used for irrigation. However, the time-drawdown transmissivity equation on page 8 was handled as if the only use of the well is to supply the winery. B) The use of the Cooper-Jacob distance drawdown transmissivity equation is a useful exercise. But conclusions were directly drawn from this calculation without any discussion of the likely impact of a fracture-flow aquifer upon these results (The Cooper-Jacob equation assumes a high degree of homogeneity in the aquifer materials resulting in the formation of a symmetrical cone of depression. In a fracture-flow aquifer the shape and dimensions of the depression are controlled by the shape and properties the fractures, and likely to be significantly longer than the calculated radius in the direction of dominant water bearing fractures). In this particular case, a discussion of the effects of topography would also have been appropriate.

9 Infiltration rate for groundwater recharge: In nearly all cases this figure must be estimated, but it is necessary to provide at least a brief rationale for how this estimate was made.

Be advised that as part of the Kleinfelder recommendations we are developing a data base of sites that have groundwater studies on file. It is intended that these studies be used as reference for future groundwater studies (note items 19 and 20 on the Kleinfelder checklist). Given that this is still a transition period in using this checklist, I would honor any request to with hold this site from the data base, particularly if there is no remaining budget to amend this report

Please feel free to contact Jon Tracy, Project Review Health Specialist at (707) 565-1683, Monday through Friday, should you have any questions on the above information.

Sincerely,

Jonathan Tracy

Jonathan Tracy, R.E.H.S.
Environmental Health Specialist

From: Jon Tracy
To: Barrett, Jennifer; Parkinson, Pete; Parsons, Dean; Swedenborg, Sigrid
Date: 06/07/2005 8:58:50 AM
Subject: Groundwater Study for 420 Wappo road, Cornell Winery, UPE03-0092.

On August 17, 2004; I wrote a letter to RGH consultants outlining nine deficiencies in the groundwater study. However, I accepted the study for the following reasons: 1) The study projected an average annual recharge to the aquifer of 9.35 acre-feet per year using estimated parameters within the range normally used by geologists in Sonoma County groundwater studies. 2) The study projected groundwater use of 4.0 acre-feet per year. The projection concludes that the winery will use 0.3 acre-feet per year and vineyard irrigation will use 3.7 acre-feet per year. I think that the winery use is an under estimate. Assuming that the winery will use one-half the amount used by Deerfield (which is twice as large), I would estimate that the winery will use 0.8 acre-feet for a total use of 4.5 acre-feet, still less than one-half of the estimated groundwater recharge on this site. 3) The study shows that there are two on-site wells that are good producing wells. 4) The study did not identify any off-site wells close enough to expect pumping interference. 5) The study "anticipates" adequate ground water supply without an adverse impact to existing wells.

This was probably the last groundwater study requested prior to implementing the Kleinfelder checklist. As such they were not held to the checklist standard, but my August 17th letter pointed out to the geologist what is expected in future studies.

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10.453.01

October 8, 2009

VIA FACSIMILE, EMAIL AND U.S. POST

Honorable Paul Kelley, Chairman
Mike Kerns, Member
Valerie Brown, Member
Shirlee Zane, Member
Efren Carrillo, Member
Sonoma County Board of Supervisors
575 Administration Drive, Room 100A
Santa Rosa, CA 95403

Board of Zoning Adjustments
c/o Permit Resource Management Department
County of Sonoma
2550 Ventura Avenue
Santa Rosa, CA 95403
(via facsimile and U.S. Post only)

Re: Henry Cornell Winery Project, 245 Wappo Road

Dear Supervisors and Board of Zoning Adjustments:

On behalf of New-Old Ways Wholistically Emerging ("NOWWE"), we respectfully submit comments opposing the project proponent's reliance upon a Mitigated Negative Declaration ("MND") instead of preparation of an Environmental Impact Report ("EIR") for the proposed Henry Cornell Winery Project ("Project") at 245 Wappo Road, Santa Rosa. Please include this letter and the attached Exhibits A-H in the public record on this matter.

I. INTRODUCTION

Mark West Creek has suffered severe sedimentation and degradation due to ill-considered removal of mature redwoods, oaks and other vegetation and ill-advised grading on steep and unstable slopes, resulting in landslides, erosion and the destruction of salmon and steelhead spawning and rearing habitat and threatened extirpation of salmonid species from this formerly pristine watershed. Typical of the destructive land abuses that have severely damaged Mark West Creek is the Henry Cornell Winery project. Despite rulings by both the Board of Zoning Adjustments and the Board of Supervisors directing the proponents of this ill-conceived Project to prepare an adequate further environmental review of its potential adverse impacts, the Project proponent is once again proposing to rely on a wholly deficient MND rather than preparing the full EIR required by the California Environmental Quality Act ("CEQA"), Public Resources Code section 21000 *et seq.*

The Project proponent's reliance on an MND violates CEQA in two fundamental respects. First, the proponent has ignored overwhelming evidence that the Project will have a significant adverse impact on biological, hydrological and geological resources, including

slope stability. Because MNDs do *not* satisfy CEQA if "substantial evidence in the record supports a *fair argument* that a proposed project *may* have a significant effect on the environment," *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1399-1400 (emphasis added) (citations omitted), the County must prepare an EIR, not an MND. Second, the MND improperly defers formulation of the mitigation measures on which it relies. For example, the MND allows the proponent to prepare in the future "a detailed, site-specific Geotechnical Study" that "shall insure that the construction of the winery" does not cause adverse geologic impacts. But CEQA does *not* permit "project plans [to] be revised to incorporate needed mitigation measures *after* the final adoption of the negative declaration." *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 306-07.

For these reasons and others as detailed below, we urge the County to stand firm and reject the Project proponent's request to rely on an MND rather than to prepare the EIR that CEQA requires.

II. CEQA REQUIRES AN EIR TO BE PREPARED

A. CEQA REQUIRES AN EIR WHENEVER A *FAIR ARGUMENT* CAN BE MADE THAT A PROJECT *MAY* HAVE SIGNIFICANT ENVIRONMENTAL IMPACT.

> "Mitigated negative declarations" are to used by lead agencies in situations where an initial study identifies potentially significant effects on the environment, but (1) revisions in the project . . . made by, or agreed to by, the applicant *before* the proposed negative declaration and initial study are released for public review would avoid . . . or mitigate the effects to a point where *clearly no significant effects on the environment would occur,* ***and*** (2) there is *no substantial evidence* in light of the whole record before the public agency that the project, as revised, *may* have a significant effect on the environment.

CEQA Guidelines [14 C.C.R.] § 15369.5 (emphasis added). By contrast, "the high objectives of [CEQA] require[] the preparation of an EIR whenever it can be *fairly argued* on the basis of substantial evidence that the project *may* have [a] significant environmental impact." *No Oil, Inc. v. City of Los Angeles* (1974), 13 Cal.3d 68, 75. "Agencies and project proponents should be aware that appellate courts in recent years seem to have been looking with an increasingly skeptical eye at negative declarations and [MNDs], especially in the context of controversial projects. Of the nine substantive challenges to negative declarations . . . in 2004 and 2005, only three negative declarations withstood judicial review." Remy, *et. al., Guide to CEQA* (Solano Press: 2006), at 255-56.

In other words, "[i]f a lead agency is presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even

though it may also be presented with other substantial evidence that the project will not have a significant effect (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68)." CEQA Guidelines § 15064(f)(1). Because the decision to prepare a negative declaration or MND "has a terminal effect on the environmental review process," the fair argument standard creates a "low threshold requirement for the preparation of an EIR." *Citizen Action to Serve all Students v. Thornley* (1990), 222 Cal.App.3d 748, 754 (internal quotations and citations omitted).

"[S]ubstantial evidence" includes "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts." CEQA Guidelines § 15384(b). Expert opinions, however, are only as "reliabl[e] and credibl[e] as the evidence constituting the foundation for those opinions." *Citizens' Committee to Save our Village v. City of Claremont* (1995), 37 Cal.App.4th 1157, 1170. Substantial evidence does *not* include "[a]rgument, speculation, unsubstantiated opinion or narrative, or evidence that is clearly inaccurate or erroneous, or evidence that is not credible." CEQA Guidelines § 15064(f)(5).

It is also important to keep in mind that "if there is disagreement among expert opinion supported by facts over the significance of an effect on the environment, the Lead Agency shall treat the effect as significant and shall prepare an EIR." *Id.* § 15064(g). In other words, "credible expert testimony that a project *may* have a significant impact, even if contradicted, is generally dispositive; and under such circumstances, an EIR must be prepared." Remy *et. al.*, *supra*, at 262.

The Project proponent has failed to show that the Project, as mitigated, will *not* have *any* significant environmental impacts. As we show below, there is overwhelming evidence in the record to show that, at the very least, a *fair argument* can be made that the Project *may* have significant environmental impacts. The MND's determination that no impacts will occur is based on conclusory expert opinions unsupported by fact; its failure to *ensure* that the Project will *not* cause significant environmental impacts necessitates the preparation of an EIR.

There are three areas that the MND's analysis is particularly deficient: hydrological, geological, and biological impacts.

B. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THE PROJECT MAY CAUSE ADVERSE HYDROLOGICAL AND WATER QUALITY IMPACTS.

The MND's discussion of the Project's impact on hydrology and water quality is woefully inadequate, particularly with regard to cumulative impacts. As discussed in more detail below, there is substantial evidence that the Project's water use may lead to significantly lower creek flows during the summer, when flows are already lowest. The Todd Engineering study relied on in the MND simply ignores that it matters *when* the Project

will use water and instead engages in a sort of percentage analysis, stating that "[c]onsidering 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." Exhibit C, at 17 (ellipsis in original). This conclusion is supposedly reinforced by the study's peer reviewer Kleinfelder, who cryptically states that Todd's study "present[s] 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." *Id.* These sorts of unsupported conclusory statements that rely on logical inferences instead of factual analysis have been repeatedly held by courts to *not* constitute substantial evidence. *See, e.g., Apartment Ass'n of Greater Los Angeles v. City of Los Angeles* (2001), 90 Cal.App.4th 1162, 1176 ("'Substantial evidence' is defined in the CEQA guidelines to include 'expert opinion supported by facts.' It does not include 'argument, speculation, unsubstantiated opinion, or narrative'" (quoting CEQA Guidelines § 16064(f)).)

There is abundant evidence in front of the County that the Project may have a significant impact on water resources. For example, the California Department of Fish and Game ("DFG") wrote a letter to the Board of Zoning Adjustments, discussing the Todd study and stating:

> The MND estimates Mark West Creek has an average annual flow of 42,671 AFY and a dry year flow of 17,600 AFY; therefore, the net loss of two AFY is likely insignificant. The County should be advised that in coastal rivers and streams the majority, if not all, of the average annual flow in a watershed occurs during a relatively short period of time (i.e., December to March). Very little of the average annual flow occurs during the summer months when juvenile salmonids, fish, aquatic invertebrates and other fish and wildlife resources are most vulnerable to reductions in cool water from base flow provided by groundwater aquifers. Considering the relatively low flow conditions during the summer months in the project reach and the consumptive groundwater use by the proposed project, in conjunction with consumptive groundwater use by single family dwellings and vineyards in the vicinity of the project area, *the effects of reduced summer base flow on fish and wildlife resources may be significant.*

Exhibit G, at 2. In other words, the Project may have a significant impact on water flows, notwithstanding the *physically* small amount of water being used, because there is so little water in the Creek during the summertime – when cool water is needed in-stream most – that virtually any withdrawal may have a significant impact. *See also* National Oceanic and Atmospheric Administration ("NOAA") letter to the Board of Supervisors, Exhibit A, at 1 (because the summer/fall flows in Mark West Creek are so low, vineyard developments should verify their water sources, which "should not be tied to surface flow without first evaluating potential impacts on salmonid habitat.").

Moreover, there are significant deficiencies with the Todd study's methods, as detailed by NOWWE's hydrogeologist and the Department of Water Resources ("DWR"). First, Todd used the wrong kind of test to determine the Project's effects on groundwater availability. *See* Kamman Decl., Exhibit F, at 2 ("The best and most appropriate method for determining groundwater flow and storage characteristics in fractured bedrock aquifers like those that exist under the Cornell site is to perform an aquifer test."); DWR letter, Exhibit H, at 1-2 ("Short-term airlift well testing results were used [by Todd] as the basic data set to analyze the groundwater availability and estimate the potential impacts of this project. This type of testing . . . is of limited value for evaluating long-term well yields and water level impacts to other wells and surface water features . . . . The most appropriate test . . . is a constant-rate aquifer test."). Moreover, the fact that Pride Wineries, Cornell's neighbor, was forced to import water during the summer of 2008 for wine production, *see* Exhibit F, at 5, shows that groundwater supplies in the project vicinity are, to put it mildly, not as ample as the MND leads one to believe.

Second, Todd determined the amount of flow in Mark West Creek at a USGS gauge about 17 miles from the project site. Exhibit F, at 3. Of course, "[a]ny impacts to water resources and the environment associated with the project will be greatest and most significant within and immediately adjacent to the site – not a location 17-miles downstream and having an intervening drainage area of approximately 40-square miles." *Id.* Because the tributaries near the Project site have much lower flows than would be measured at the USGS gauge, and because (contrary to Todd's implied assumptions) water flow is not evenly distributed throughout the year but instead mostly occurs during the rainy season, the amount of water that would be pumped for the Project "reflect[s] a relatively large, if not entire (100%), percentage of the dry season creek flow. Thus, the potential certainly does exist for the Cornell project to impart significantly adverse reductions in creek summer base flow and, in turn, impacts to creek ecology within and downstream of the confluence of the North and South watersheds." *Id.* at 4.

There is therefore "substantial evidence in the record [to] support[] a fair argument that [the] proposed project may have a significant effect on" water resources. *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1399-1400. Indeed, the evidence to support the idea that there may be such a significant effect is much more substantial than the evidence supporting the Todd study's conclusions to the contrary. As Todd stated, "we recognize that long-term and cumulative indirect impacts to Mark West Creek and its tributaries may occur . . . . 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." MND/Environmental Checklist, Exhibit C, at 17. An EIR must be prepared.

C. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THE PROJECT MAY CAUSE ADVERSE IMPACTS TO GEOLOGY AND SOILS.

The MND also fails in its discussion of geology and soils impacts. It acknowledges that "the [Project] site is within the area of high to moderate potential for landslides" and also that "[t]he site's surface soils have a moderate to high erosion potential depending on slope inclination." Nonetheless, the MND concludes that all potential geology and soils impacts will be mitigated "to a less than significant level." Exhibit C, at 13. This violates CEQA in two ways. First, the MND repeatedly relies on a future "detailed, site-specific Geotechnical Study" to "insure that the construction of the winery is engineered to eliminate the probability of downward creep, erosion, landslides, and soil/bedrock expansion." *Id.* at 12-13. But, as discussed in more detail *infra* § III, CEQA requires mitigation measures to be included in the adopted MND, not deferred for later formulation. *See Sundstrom, supra,* 202 Cal.App.3d at 306-07 ("The requirement that the applicant adopt mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA."). The Project proponent cannot "insure" that there will be no future significant impacts on geology and soils/slope stability by simply waving its hand and stating so.

Second, the studies relied on by the MND are methodologically flawed; given the limited amount of information available, there is a fair argument that the project may cause a significant impact on geology and soils/slope stability. *See, e.g., Sundstrom,* 202 Cal.App.3d at 311 ("Deficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences.") Because no "detailed, site-specific" study has ever been conducted, (indeed, RGH's 2008 study (Exhibit B), on page 3, specifically states that it is *not* intended to be a "geotechnical study report"), the conclusions reached by RGH and Kleinfelder that Project construction will not cause landslides and soil erosion amount to little more than speculation.

The geotechnical reports relied on by the Project proponent have many shortcomings. First, Kleinfelder's peer review of the RGH report was an improper conflict of interest under the California Mining and Geology Board's "Guidelines for Reviewing Geologic Reports."[1] A conflict of interest "exists . . . where the geologic review is performed by a consulting geologist who also is . . . performing geologic investigations within the same jurisdictional area." *Id.* (parentheses omitted). This type of conflict "should be avoided, if at all possible." *Id.* The County has not attempted to demonstrate that it was infeasible to retain an independent, unbiased, geologist.

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[1]California Geological Survey - CGS Note 41-Guidelines for Reviewing Geologic Reports, *available at* http://www.consrv.ca.gov/cgs/information/publications/cgs_notes/note_41/Pages/Index.aspx.

Second, RGH's report relies on extremely old studies that are "not intended nor suitable for site specific application" to determine whether or not landslides exist on the Project site. Waldbaum Decl., Exhibit D, at 7. One of these studies is 33 years old; the other is a relatively spritely 29 years, but based on data between 35 and 38 years old. Exhibit B, at 12. RGH claims to have observed other landslides during a site visit, but curiously makes no explicit mention of a 2005 landslide at 245 Wappo Road, the winery's address. The 2005 landslide "formed below a septic drain field." Exhibit D, at 7. "[A]ny change in moisture conditions in a marginally stable slope can trigger landsliding. Moisture increases can result from installation of drain fields"; a drain field is proposed as part of the Project. *Id.* "[D]isregard for geologic stability of the proposed wine[ry] could easily have the same disast[]rous results" on the Project site "as it did at the 245 Wappo road residence site." *Id.* at 8. Because RGH's study contains no information that could lead one to reasonably conclude that landslides will not occur at the Project site for the same reasons they occurred at the similar residence site, these statements themselves constitute substantial evidence supporting a fair argument that the Project may cause adverse impacts to geology and soils. Prior landsliding on the same site indicates that it is probably unstable and without evidence to the contrary supports a fair argument that the Project may cause significant adverse impacts to soils/slopes and streams.

Third, RGH has failed to include in its study information that is essential to determine whether or not the project is actually geotechnically feasible. For example, California requires a determination of slope stability (also known as the "factor of safety"), but "no factors of safety have been determined for the proposed" Project. *Id.* at 9. Furthermore, the fact that RGH simply filled Plates 5A and 5B of its report (the "geologic cross-sections") with "rows of question marks . . . . is a stark acknowledgement that the geologic structure and landslide setting of the site are simply unknown." *Id.* at 10.

Finally, RGH's report leaves many other essential questions unanswered. For example, there is no discussion of how the creek will be protected from slope failure during grading. *Id.* at 11. Nor is there any discussion of how backcut failure will be prevented. *Id.* In essence, RGH simply defers everything to future analysis. "The primary geotechnical considerations and potential mitigating measures recommended for winery site development, including constructing buttressed fills bearing on sloping terrain and reconstructing landslides, as appropriate, will be addressed during a detailed site-specific Geotechnical Study. . . ." Exhibit B, at 21. RGH's failure to resolve key geotechnical questions, discussed above, when combined with its statement that "it must be accepted that occasional slope failure, reactivation of landslides and erosion and deposition of the residual soils and weathered bedrock materials are irreducible risks and hazards of building upon or near the base of any hillside or steep slope throughout Northern California," *id.* at 27, leave the reader and public with very little assurance that the site is actually geotechnically feasible for the Project, or that the MND's "mitigation measures" will succeed in mitigating these potential impacts to geology and soils. According to the statewide standards of care governing geologic, geotechnical and grading practices, with the sole exception of fault movement, all

geologic hazards must be *eliminated*, not merely reduced, before development may proceed. The improper understanding of this concept by RGH reflects its fundamental lack of adequate analysis of this site. RGH Consulting recently received a written warning, and Kleinfelder a citation and fine, by the Board of Registration for Geologists on this site and a nearby site in Sonoma County. It is clear that from the facts that there is a *fair argument* that the Project *may* have a significant adverse impact on geology and soils).

D. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THERE MAY BE ADVERSE BIOLOGICAL IMPACTS.

The MND concludes that there will be no significant impacts to biological resources because "the project does not include modifications to any wetland or special habitat." Exhibit C, at 9. It also states that there will not be substantial interference with fish or wildlife migration because "[n]o fencing is proposed that would obstruct wildlife movement. The project development does not include any work within a creek." These statements are entirely conclusory and completely unsupported by any kind of evidence, much less substantial evidence, as required. The Project proponent simply ignores the amply-demonstrated fact that, although the Project *itself* may not be *in* Mark West Creek, the Project may impact fish species, and their migration patterns, by leading to siltation and lower water flows in the Creek, as demonstrated above.

NOWWE's expert biologist, Dr. Stacy Li, pointed out that in October 2008, the streamflow in Mark West Creek was so low (0.01 cfs, about the same as the flow from a garden hose) that any "[w]ater diversion under these very low flow conditions could easily drain the stream. Water diversion purposes such as frost protection or heat control," both of which are used in wineries, "would be particularly debilitating because water need for these conditions is on a regional rather than an individual basis, so water demand is large and simultaneous." Li Decl., Exhibit E, at 4. In 2008, the worst frost protection season in recent history, frost protection diversions killed federally listed species at least twice; once, endangered salmon were killed when the creek they lived in was literally sucked dry. *Id.*

The DFG letter discussed *supra* § II(B) also demonstrates that the Project is likely to have an adverse impact on fish and wildlife. "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 . . . . [¶] Considering the relatively low flow conditions during the summer months in the project reach . . . the effects of reduced summer base flow on fish and wildlife resources may be significant." Exhibit G, at 1-2.

NOAA's letter, which commented on the previous iteration of this project, illustrates the adverse effects that poorly-planned developments can have on biological resources. Exhibit A at 1-2. Low summer flows in Mark West Creek have in the past led to dewatering just upstream from the project site. *Id.* at 1. Grading work has a deleterious effect as well: "[f]ine sediment in streams adversely affects spawning habitat, rearing habitat, and aquatic

invertebrate production that is food for fish. . . Please ensure that land development is not occurring in inappropriate places such as areas of high landslide potential." *Id.* Of course, the Project is to be located in just such a place. As such, it is reasonable for one to be "deeply concerned about degrading habitat quality in Mark West Creek from cumulative development activities such as water supply development and fine sediment generation from grading activities." *Id.* Yet the MND completely ignores that the Project may have these effects.

The MND's determination that fish and wildlife will not be impacted seems to be predicated on the MND's determination that there will be no impacts on hydrology/water quality or geology/soils. However, as discussed *supra*, that conclusion is flawed. The Project's water use will come at a time of year when water is needed most by fish species, and the recent 2005 landslide has already significantly reduced the amount of available steelhead habitat and made it more difficult for steelhead to spawn. Exhibit E, at 3. The Project is therefore likely to have an adverse effect on biological resources, despite the MND's completely unfounded assertions to the contrary.

II. THE MND IMPROPERLY DEFERS FORMULATION OF MITIGATION MEASURES AND DELEGATES THEIR APPROVAL TO A SUBORDINATE AGENCY, IN VIOLATION OF CEQA.

As mentioned *supra*, CEQA requires that, when an agency decides to prepare an MND, mitigation measures must be incorporated into the project "*before* the proposed negative declaration is released for public review . . . ." *Sundstrom, supra*, 202 Cal.App.3d at 306 (quoting CEQA Guidelines § 15070(b)(1)). That is to say, "requir[ing an] applicant [to] adopt mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA." *Id.*

It is true that an agency may properly condition MND approval on, for example, an applicant's compliance with air and water quality, or other environmental, standards. *Id.* at 308. This is because compliance with such standards is based on "specific performance criteria articulated at the time of project approval." *Sacramento Old City Ass'n v. City Council* (1991), 229 Cal.App.3d 1011, 1028. However, such a situation only arises where an agency "recognize[s] the significance of the potential environmental effects, commit[s] itself to mitigating their impact, and articulate[s] specific performance criteria." *Gentry, supra,* 36 Cal.App.4th at 1395.

Nonetheless, requiring applicants to *commission future studies* and comply with the mitigation measures recommended in them has been repeatedly held to violate CEQA. For example, in *Sundstrom*, a developer was planning to construct a hotel and restaurant; after potential impacts to hydrology and soils became apparent, the County required the applicant to "have a study prepared by a civil engineer which evaluates potential effects of the

proposed development upon soil stability, erosion, sediment transport, and the flooding of downslope properties and contains recommended mitigation measures to minimize such impacts." *Sundstrom, supra*, 202 Cal.App.3d at 306. The County also required review and approval of the plan by planning and building services, after which the mitigation measures would be incorporated into the use permit. *Id.* The court held that this condition constituted a "post hoc rationalization of agency actions" that would "inevitably have a diminished influence on decisionmaking"; this violated CEQA. *Id.* at 307. Moreover, such deferral of mitigation measures subverts one of the key purposes of CEQA: to ensure the adequacy of environmental review by exposing it to the public and interested agencies. *Id.* at 307-08. "By merely requiring administrative approval of the hydrological studies, the use permit provides no . . . guarantee of an adequate inquiry into environmental effects." *Id.* at 307. Finally, the court also held that the mitigation measure violated CEQA by improperly delegating to the planning commission staff the responsibility to, in essence, determine the adequacy of the negative declaration. *Id.* at 307.

Similarly, in *Gentry, supra,* 36 Cal.App.4th at 1396, the court also found a mitigated negative declaration to violate CEQA because it contained a deferred mitigation condition. There, the project approval permitted the City to require the applicant to submit a biological report regarding the Stephens' kangaroo rat; if such a report were to be required, the applicant would have to comply with "any recommendations" in it. *Id.* This condition was "on all fours with the condition in *Sundstrom*" and therefore also constituted an improper deferral of mitigation. *Id.* Because the record contained "substantial evidence to support a fair argument that the Project, even as mitigated . . . would have a significant effect on the Stephens' kangaroo rat . . . any proposed mitigation for impacts on the . . . rat had to be made available for public review" and not deferred for future formulation. *Id.* at 1397.

These cases are on point and govern the situation here. The MND requires Cornell to "prepare[] and submit[]" a "detailed, site-specific Geotechnical Study" that "address[es] all issues raised in the Preliminary Geologic Study . . . and . . . insure[s] that the construction of the winery is engineered to eliminate the probability of downward creep, erosion, landslides, and soil/bedrock expansion." Exhibit C, at 12, 13. The RGH study relied on by the County candidly admits that "[t]he primary geotechnical considerations and potential mitigating measures recommended for winery site development . . . will be addressed during a detailed site-specific Geotechnical Study." Exhibit B, at 21. In other words, "primary geotechnical considerations and potential mitigating measures" have not yet been addressed. There is therefore no evidence whatsoever, much less substantial evidence, to support the MND's assertion that "[c]ompliance with [RGH's preliminary] recommendations would reduce geology and soils impacts to a less-than-significant level." Exhibit C, at 12, 13. Because the record contains "substantial evidence to support a fair argument that the Project, even as [presently] 'mitigated' . . . would have a significant effect on" geology and soils, "*any* proposed mitigation for impacts" to such resources "ha[ve] to be made available for public review." *Gentry, supra,* 36 Cal.App.4th at 1397 (internal quotation marks added). Their formulation may not be deferred to a later date so as to preclude public review.

Finally, by vesting the Permit and Resource Management Department (PRMD) with the power to "Review and Approv[e]" the future Geotechnical Study, Exhibit C, at 13, the MND improperly delegates the authority to devise and assess the adequacy of mitigation measures. When analyzing the restrictions quoted three paragraphs above, the court held that "the conditions improperly delegate the County's legal responsibility to assess environmental impact by directing the applicant himself to conduct the hydrological studies subject to the approval of the planning commission staff." *Sundstrom, supra*, 202 Cal.App.3d at 307. The court analogized the situation to that in *Kleist v. City of Glendale* (1976) 56 Cal.App.3d 770, 779, where "the court held that the city council cannot delegate responsibility for considering the EIR to a planning board;" in the *Sundstrom* Court's view, "[b]y necessary inference, the board of supervisors cannot delegate the responsibility to the staff of the planning commission." *Sundstrom, supra*, 202 Cal.App.3d at 307. So too here, the County cannot delegate this responsibility to the PRMD.

III. CONCLUSION

The Project proponent has ignored substantial evidence that the Project may have significant impacts on the environment, even with the MND's "mitigation measures." The MND improperly defers the formulation of mitigation measures and unlawfully delegates the responsibility to approve these future mitigation measures to the PRMD. An EIR is clearly required. To proceed without one would be an abuse of discretion in violation of CEQA. If the County fails to prepare an EIR, NOWWE would be impelled to pursue appropriate legal remedies. We understand that this Project is still under review and that additional material may be added to the file. However, the requirement that an EIR be prepared has already been triggered.

Thank you for considering our views on this important matter.

Very truly yours,

Stephan C. Volker
Attorney for New-Old Ways
Wholistically Emerging

SCV:taf

EXHIBITS

(A) NOAA letter to the Board of Supervisors (June 7, 2005)

(B) RGH Consultants, Updated Preliminary Geologic Study Report (Apr. 22, 2008)

(C) Sonoma County, Mitigated Negative Declaration, with attached Initial Study and Environmental Checklist (Sept. 2008)

(D) Waldbaum Decl., Geologic Review of Updated RGH Geologic Report (Nov. 11, 2008)

(E) Li Decl. (Nov. 12, 2008)

(F) Kamman Decl., "Technical Review of Henry Cornell Winery" (Nov. 12, 2008)

(G) DFG letter to the Board of Zoning Adjustments (Nov. 24, 2008)

(H) DWR letter to Mr. David Hardy, Sonoma County PRMD (Dec. 3, 2008)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-6528

June 7, 2005

Sonoma County Board of Supervisors
575 Administration Drive, Room 100-A
Santa Rosa, California 95403

Dear Supervisors of Sonoma County:

NOAA's National Marine Fisheries Service (NMFS) is writing in relation to a request by W. Guy Davis for a new winery at 420 Wappo Road, Santa Rosa, California, APN 028-260-047, Supervisorial District 1.

NMFS is responsible for the protection, maintenance, and recovery of anadromous salmonids. The Mark West Creek watershed supports steelhead trout (*Oncorhynchus mykiss*) and may still support coho salmon (*Oncorhynchus kisutch*), both listed as threatened species under the Federal Endangered Species Act. We are deeply concerned about degrading habitat quality in Mark West Creek from cumulative development activities such as water supply development and fine sediment generation from grading activities.

Mark West Springs Creek is excellent juvenile steelhead rearing habitat, but tends to have low stream flow during the summer and fall. There are two dewatering reports in Mark West Creek in the California Department of Fish and Game files. One was directly upstream of 775 Mark West Springs Road and the other was along St. Helena Road at Rancho Mark West. Any vineyard development should verify where they will get their water. We would prefer that the water source not be tied to surface flow without first evaluating potential impacts on salmonid habitat.

Fine sediment in streams adversely affects spawning habitat, rearing habitat, and aquatic invertebrate production that is food for fish. Minimizing non-point source pollution is also a concern of the Regional Water Quality Control Board. It is identified in their Basin Plan. Please ensure that land development is not occurring in inappropriate places such as areas of high landslide potential.

9

The Endangered Species Act alone is insufficient to minimize adverse impacts to listed species. Federal, state and local authorities, particularly those involved with land use practices, must consistently allow only responsible land development if listed species are to be protected, maintained, and ultimately restored.

Sincerely,

Steven Edmondson
Northern California Habitat Supervisor

cc: Dick Butler

RGH

CONSULTANTS, INC.

PRELIMINARY GEOLOGIC STUDY REPORT

CORNELL WINERY
245 WAPPO ROAD
SANTA ROSA, CALIFORNIA
APN 028-260-041

Project Number:
2096.02.01.1

Prepared For:

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(Updated April 22, 2008)

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INTRODUCTION

This report updates and supersedes our Preliminary Geologic Study (PGS), dated May 31, 2006, for the proposed Cornell winery to be constructed on the lands of Cornell Farms, LLC in Sonoma County, California. The Cornell Farms land consists of 174 acres situated within rural open space and is approximately 1 mile east of the Sonoma-Napa County line. The proposed winery site is located at 245 Wappo Road (APN 028-260-041), the southwestern 40-acre parcel of the Cornell Farms property. The Cornell Farms property is accessed by Wappo Road, a partial paved/dirt and gravel road that extends generally northward off St. Helena Road. The subject parcel, or property, as referred herein, is the 40-acre parcel located at the 245 Wappo Road address unless specified otherwise. The 40-acre subject parcel relative to the Cornell Farms land is shown on the Site Vicinity Map, Plate 1, Appendix A, presented herein and in our original report.

The terrain on the subject parcel extends over variably-sloping shrubland and woodland characterized by westerly-facing spur ridges and intervening ravines off a southerly trending ridge and knoll top that borders the eastern parcel boundary. In general, the groundslopes across the site range locally between about 1.3:1 (Horizontal to Vertical) and 13H:1V. Groundslopes generally range between 3½H:1V and 7½H:1V at the proposed winery site. The U.S. Geological Survey (USGS) 7½ Minute series topographic map of the Calistoga Quadrangle (1997) indicates the topography ranges from over 1680 feet above mean sea level along the eastern parcel boundary to approximately 1360 feet within a deep ravine on the west. It should be noted that the contours shown on the USGS map do not agree with the contours shown on the site specific topographic map, presented herein as the Geologic Map and the Exploration Plan. Wappo Road traverses northeasterly through the southeastern quadrant of the subject parcel. Site improvements include a residence, a leachfield, a small vineyard and a well on the southwestern quadrant of the property. The proposed winery site is located on the western portion of the southeastern quadrant of the 40-acre parcel, and immediately northwest of Wappo Road. The vegetation at the site and immediate vicinity were grubbed during the summer of 2005 and covered with erosion

control (straw, bales and wattles). Since our original study, more extensive grubbing and clearing has occurred and the erosion control materials have degraded over time.

BACKGROUND

We performed a Preliminary Geologic Study (PGS) for a proposed winery site and submitted the results in a report dated May 31, 2006. At the time of our study, the concept was to construct the proposed winery across two spur ridges that are separated by the head of a narrow ravine, and then step down the hillside. Building plans were still in the formative stages, thus we did not know details of the winery layout. Our study included field mapping and drilling three borings in the immediate vicinity of the proposed winery.

Following the submittal of our PGS report to the client, we received a preliminary site plan showing the proposed winery improvements. The improvements were situated immediately northwest of Wappo Road and across the spur ridges. The plan included wine cave portals to commence near Wappo Road and extend eastward into the hillside. Accordingly, we performed additional subsurface exploration for the proposed improvements. Subsequently, the winery improvements were re-designed. The revised plan shows the winery to be constructed across the hillside rather than being stepped downhill, and it is shifted approximately 65 feet north and 70 feet west of its previous location. Because of these changes, and more extensive grubbing and clearing of vegetation at the proposed winery site, we recommended and performed additional subsurface exploration for preparation of this revised PGS report.

PURPOSE

The purpose of this study, as outlined in our confirming agreement dated November 8, 2005 and revised per discussions with Mr. Guy Davis, manager of the Cornell Farms vineyard, during our subsurface exploration on December 12, 2005, was to evaluate the geologic hazards at the winery site and to comment on the geotechnical feasibility of the project rather than to complete a geotechnical study report. This was requested because the winery plans were in the formative stages and it was desired to obtain a land use permit. In addition, we were to recommend future geotechnical engineering services needed for actual development, design and construction of the winery project.

SCOPE

Our updated scope of work collectively included reviewing our previous work at the site, selected published geologic data and stereo-paired aerial photographs; performing a site reconnaissance with geologic mapping; deep subsurface exploration; supplemental subsurface exploration in accordance with then-applicable and current plans; and preparation of this updated report. Once the land use permit is obtained, and the winery layout plans, type of construction and elevations are close to final, we will assess the need for supplemental subsurface exploration and complete a site-specific Geotechnical Study report that provides geotechnical recommendations for final design.

SERVICES PROVIDED

We reviewed our work at the site and select published geologic information and stereo-paired aerial photographs pertinent to the winery site. Geologic information we reviewed included "Geology for Planning in Sonoma County," prepared by Huffman and Armstrong (1980) of the California Geological Survey (CGS), formerly the California Division of Mines and Geology, and "Reconnaissance Photo-Interpretation Map of Landslides in 24 Selected 7.5-Minute Quadrangles in Lake, Napa, Solano, and Sonoma Counties, California," prepared by Dwyer et al. (1976) for the USGS. The portions of the CGS geologic map by Huffman and Armstrong (1980) pertinent to the site is shown on Plates 2A and 2B, Appendix A, of this report. The portions of the CGS Landslides and Relative Slope Stability map and the USGS Reconnaissance Photo-Interpretation Map of Landslides pertinent to this site are shown on Plates 3A and 3B, respectively, Appendix A. We also had a personal communication with Robert McLaughlin (2006) of the USGS regarding recency of faulting in the vicinity of the site. The listing of the geologic references reviewed is presented in Appendix B. In addition to our review of the original PGS report, geologic literature and stereo-paired aerial photographs, we performed supplemental geologic mapping for the portion of the parcel including the winery site, supplemental deep subsurface exploration at the proposed winery sites and constructed additional geologic cross sections. Based on our inclusive work at the site, we were to provide the following preliminary information for the winery project:

1. A brief description of soil and geologic conditions observed during our reconnaissance and subsurface exploration;

2. Distances to nearby active faults and a discussion of geologic hazards;

3. Our opinion regarding the potential geologic hazards and geotechnical feasibility of the winery project; and

4. Recommendations for possible supplemental subsurface exploration in order to develop site-specific geotechnical recommendations for the final design and construction of this project.

Site Reconnaissance

On August 26, 2005, our geologist conducted a surficial reconnaissance of the property to observe features detected in aerial photographs, exposed topographic features, surface soils, rock outcroppings and cut banks. Outcrops mapped were located by triangulation to mapped surface features on the USGS Calistoga 7½ minute quadrangle and supplemented by a hand-held Global Positioning System (GPS) instrument. Outcrops were plotted and confirmed by GPS measurements.

During our supplemental subsurface exploration from March 11 through 13, 2008, additional information and features related to slope instability, bedrock outcrops and erosion features were mapped. These features are shown on a topographic map of the current winery plans prepared by Backen Gillam Architects, the project architect, are presented herein on the Site Geologic Map, Plate 4, Appendix A. Supplemental geologic cross sections were constructed across the winery site and through the borings and test pits using topography shown on Plate 4. The supplemental geologic cross sections are shown on Plates 5A and 5B. A generalized geologic cross section was constructed oblique to the contours to show geologic structure, and is shown on Plate 5, Appendix C.

Subsurface Exploration

On November 8 through 14, 2005, we explored subsurface conditions across the general winery site by drilling, logging and sampling one core boring (Core Boring 1) to a depth of approximately 104 feet. The core boring was drilled with a track-mounted auger-mud rotary drill rig. Due to limited and disturbed core recovery, relatively undisturbed samples were obtained at selected intervals up to a depth of 28 feet by driving a 2.43-inch inside diameter Sprague and Henwood split barrel sampler, containing 6-inch long brass liners, using a 140-pound hammer falling approximately 30 inches. The sampler was driven 12 to 18 inches. The blows required to drive each 6-inch increment were recorded and the blows required to drive the last 12 inches, or portion thereof, were converted to equivalent Standard Penetration Test (SPT) blow counts for correlation with empirical test data. Sampler penetration resistance (blow counts) provides a relative measure of soil/rock consistency and strength. Below a depth of 28 feet, the boring was advanced by continuously drilling and spot coring with core barrels using rotary wash techniques. Spot samples of rock cores were recovered using 94 mm and HQ core barrels. The core samples were visually classified and logged by our field geologist, and stored in core-boxes for transport to the office.

On December 12 and 13, 2005, we drilled two bucket auger borings to depths of 50 (Test Boring 2) and 63 feet (Test Boring 3). The borings were drilled with a Calweld 42 bucket auger drilling rig equipped with a 24-inch diameter bucket auger. Sidewalls were cleaned of smear and visually downhole logged in detail. The core and bucket auger boring logs are presented on Plate 6 through 8, Appendix C.

During the preliminary design phase of the project and following submittal of our original Preliminary geologic study report, we performed subsurface exploration at various times and using various methods in response to ongoing design modifications. The dates and methods of subsurface exploration are summarized in chronological order below.

On September 27, 2006, we explored subsurface conditions for the initial winery configuration by excavating five test pits to depths ranging from about 6 to 18 feet with a

John Deere 160C LC track-mounted excavator. Test pit sidewalls were cleaned of smear and logged in detail.

On November 15 through 18, 2006, we supplemented the test pits by drilling five test borings to depths ranging from about 30 to 48½ feet. The borings were drilled with a track-mounted auger-mud rotary drill rig and advanced by coring with pitcher barrels using rotary wash techniques. Core samples of the soils and bedrock were recovered at selected intervals by using pitcher barrels. The core samples were visually classified and logged by our geologist, and stored in core boxes for transport to our laboratory. Disturbed samples were also obtained at selected depths by driving a 1.375-inch inside diameter (2-inch outside diameter) Standard Penetration Test (SPT) sampler, without liners or rings, using a 140-pound hammer dropping approximately 30 inches. The sampler was driven 12 to 18 inches, the blows to drive each 6-inch increment were recorded, and the blows required to drive the final 12 inches, or portion thereof, are provided on the test boring logs. Grab samples were collected at selected intervals from the test pits and placed in plastic bags.

On March 11 through 13, 2008, we explored subsurface conditions for a new winery configuration by excavating 12 test pits to depths ranging from about 5 to 14 feet using a Hitachi 120 track-mounted excavator. Test pit sidewalls were cleaned of smear and logged in detail.

The exploration locations were determined approximately by pacing their distance from features shown on the Exploration Plan (Plate 6) and should be considered accurate only to the degree implied by the method used. Our geologist located and logged the borings and test pits and obtained relatively undisturbed spot core and bulk samples of the materials encountered for visual examination, classification, and possible laboratory testing.

The logs of the test pits and supplemental core borings showing the materials encountered, depth to free water seepage and sample depths are presented on Plates 7 through 28, Appendix A. The soils are described in accordance with the Unified Soil Classification System, outlined on Plate 29, Appendix A. Bedrock materials are described in accordance with Engineering Geology Rock Terms shown on Plate 30, Appendix A.

SITE CONDITIONS

General

Sonoma County is located within the California Coast Range geomorphic province. This province is a geologically complex and seismically active region characterized by sub-parallel northwest-trending faults, mountain ranges and valleys. The oldest bedrock unit in the area is the lower Jurassic to upper Cretaceous Franciscan Complex, originally deposited in a marine environment. Subsequently, younger rocks such as the Tertiary-age Sonoma Volcanics group, the Plio-Pleistocene-age Clear Lake Volcanics and sedimentary rocks such as the Guinda, Domengine, Petaluma, Wilson Grove, Cache, Huichica and Glen Ellen formations were deposited throughout the province. Extensive folding and thrust faulting during late Cretaceous through early Tertiary geologic time created complex geologic conditions that underlie the highly varied topography of today. In valleys, the bedrock is covered by thick alluvial soils.

Geology and Soils

The CGS geologic maps prepared by Huffman and Armstrong (1980), shown on Plate 2A and 2B in Appendix A of this report, indicate an unnamed thrust fault extends northwesterly through the northern portion of the parcel. The thrust fault is shown to juxtapose sheared shale and sandstone (melange unit) of the Franciscan Complex northeast of the fault over the younger tuffaceous unit of the Sonoma Volcanics Group on the southwest (Huffman and Armstrong, 1980; Fox 1973). The melange unit is shown to consist of sheared shale and sandstone that contains generally resistant masses of chert, high-grade metamorphic rocks, variable shattered sandstone and greenstone,

metagreenstone and generally less resistant serpentinite. The tuffaceous rocks are reported to comprise pumicitic ash-flow tuff that is locally or partly welded, and contains bedded agglomeratic tuff, andesitic or basaltic lava flows, tuff breccia, bedded tuff and pumicitic tuff.

Based on Huffman and Armstrong (1980) and Fox (1973), the winery site is shown to be underlain by the Sonoma Volcanics; however, our findings indicate the site to be underlain by the Franciscan Complex. During our August 25, 2005 site reconnaissance, we observed outcrops of the Franciscan Complex on the knoll top on the eastern portion of the parcel, along a portion of the road cut for Wappo Road and within a cut slope east of the existing leachfield. We also observed Franciscan Complex bedrock along the road past the electronic gate on the eastern side of the subject parcel. On the western portion of the parcel, we observed local outcrops of tuff breccia of the Sonoma Volcanics. Our test pits and supplemental borings confirm the winery site is underlain by materials of the melange unit of the Franciscan Complex. During our reconnaissance of March 11 through 13, 2008, we observed Franciscan Complex outcrops at the bottoms of the southern ravines and cuts made for a siltation basin further south. These areas were previously covered with erosion control straw which has subsequently degraded. The results of our outcrop mapping are shown on Plate 4, Appendix A.

Mapping by the U.S. Soil Conservation Service (Miller, 1990) has classified soil over the portion of this property proposed for development as belonging to the Goulding (GlF) series with areas of Boomer loam, Henneke gravelly loam and Toomes rocky loam. The Goulding series is shown to consist of well-drained clay loams that are underlain by metamorphosed basic igneous and weathered andesitic basalt of old volcanic formations. These soils are said to be found on mountainous uplands with slopes of 30 to 50 percent. The series comprises two soil horizons. The topsoil is shown to be a cobbly clay loam that exhibits moderate plasticity (LL = 30-40; PI = 15-30) and moderate shrink-swell potential, and extends to a depth of 10 inches. The subsoil is shown to be a very gravelly clay loam that exhibits moderate plasticity (LL = 30-40; PI = 15-30) and low shrink-swell potential, and extends from a depth of 10 to 20 inches. Runoff over these soils is said to be

rapid. The hazard of erosion is said to be high. The risk of corrosion for uncoated steel is given as moderate in topsoil and low in subsoil.

As previously discussed, the portion of this property proposed for development is underlain by rocks of the Franciscan Complex. The Boomer series (BoF) appears to resemble the soils developed on the Franciscan rocks in the area. The Boomer series is said to consist of well-drained clay loams that have a clay loam subsoil, and are underlain by greenstone and metamorphosed rocks. These soils are said to be found on mountainous uplands with slopes of 30 to 50 percent. The series comprises two soil horizons. The topsoil is shown to be a loam that exhibits moderate plasticity (LL = 30-40; PI = 5-15) and moderate shrink-swell potential, and extends to a depth of 19 inches. The subsoil is shown to be a gravelly clay loam and clay loam that exhibits moderate plasticity (LL = 30-40; PI = 10-20) and moderate shrink-swell potential, and extends from a depth of 19 to 55 inches. Runoff over these soils is said to be rapid. The hazard of erosion is said to be high. The risk of corrosion for uncoated steel is given as low in topsoil and moderate in subsoil.

Performing corrosivity tests to verify these values was not part of our requested and/or proposed scope of work. Should the need arise, we can provide a proposal to evaluate these characteristics.

Landslides

Published CGS and USGS maps do not show the presence of landslides at the proposed winery site. However, we encountered active, dormant and ancient landslides at the site during the course of our study. Brief descriptions of active, dormant and ancient landslides are summarized herein:

Active - Active landslides, including recently active, exhibit areas of unstable ground with fresh geomorphic features. Common fresh features can include

hummocky topography, abrupt grade breaks, ground cracks, exposed soils and disrupted vegetation. Active landslides typically range in age from recent to ±50 years.

Dormant - Dormant landslides 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 original. The age of dormant landslides is estimated to range from ±50 years to several hundred years.

Ancient - 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 type as the surrounding terrain.

Presented below is a summary of landsliding mapped in the vicinity by CGS and USGS. A summary of landsliding observed during our study is presented in the Landslides subheading commencing on Page 19 of this report.

The CGS "Landslide and Relative Slope Stability" maps (Plate 3A, Appendix A) by Huffman and Armstrong (1980) do not show the presence of landslides at the proposed winery site. The site is shown to be within a relative slope stability category "C" - areas of relatively unstable rock and soil units, and slopes of greater than 15 percent are said to contain abundant landslides. There are three landslides mapped by Huffman and Armstrong within the near vicinity:

1. A very large landslide is shown to the northeast of the winery site. The nearest part of the site is shown to be the knoll top approximately 250 feet east of the proposed winery site. Our site reconnaissance indicates this knoll is underlain by rocks of the Franciscan Complex. The nearest portion of the

landslide we observed is on the steep eastern flanks of Wappo Road past the winery site and approximately 500 feet northeast of the proposed winery site;

2. A second landslide is shown approximately 500 feet away on the far western parcel boundary that encompasses the residence and also includes the southern and southeastern flanks of a knoll across the ravine. We confirmed the presence of at least a portion of this landslide during our subsurface exploration on March 11 through 13, 2008; and

3. A third, queried (?) landslide is shown 1000 feet away two ravines to the east.

The USGS "Reconnaissance Photo-Interpretation Map of Landslides" by Dwyer, et al (1976) does not indicate the presence of landslides at the winery site (Plate 3B, Appendix A). Further, Dwyer et al (1976) shows a much smaller landslide to the northeast. That landslide is mapped to be at least 900 feet northeast of the proposed winery site. The Dwyer landslide is mapped on the southern flanks of a very narrow ridgeline. The second and third landslides mapped by Huffman and Armstrong (1980) were not confirmed by Dwyer's (1976) map.

It should be noted that much of the data in the Huffman and Armstrong publication was compiled between 1971 and 1974, or before the Dwyer map was completed. In addition, page 2 of "Geology for Planning in Sonoma County" discusses several limitations of the published maps, including that the data was mostly obtained by aerial photograph interpretation without field verification and the scale (1:62,500) of the base map.

Surface

The roughly square-shaped, 40-acre parcel is located within rural open space at 245 Wappo Road. The terrain extends over shrubland and woodland characterized by westerly-

facing spur ridges and intervening ravines off a southerly trending ridge and knoll top that borders the eastern parcel boundary. Plate 1 shows that the topography ranges from over 1680 feet on a prominent knoll top on the eastern part of the parcel to approximately 1360 feet on a deeply incised ravine on the west. As previously discussed, the contours shown on the USGS map do not agree with the contours shown on the Site Geologic Map (Plate 4) and Exploration Plan (Plate 6). Wappo Road initially extends northerly off St. Helena Road and traverses northeasterly through the southeastern portion of the parcel. Wappo Road is paved for the first approximately 300 feet then transitions to a dirt and gravel road. The parcel contains a residence, a leachfield, a well and a small vineyard on the southwestern quadrant of the property.

The proposed winery site is located in approximately the southeastern quadrant of the property and on the northwesterly (downhill) side of Wappo Road. The site was grubbed of natural brushwood during the summer of 2005 and was covered with erosion control (straw, bales and wattles). Subsequently, more extensive grubbing and clearing was performed after submittal of our original preliminary geologic study report of May 31, 2006, and the erosion control has degraded. The terrain is characterized by westerly to northwesterly-sloping ridges and intervening ravines. Groundslopes across the winery site generally range between 3½H:1V and 7½H:1V.

In general, the ground surface is currently wet, 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. On sloping terrain 5H:1V or steeper, the weak, surface materials are prone to undergo a gradual downhill movement known as creep which includes a large portion of the site. Areas of active soil creep are shown on the Site Geologic Map (Plate 4). Soil creep is inherent to hillsides in the area and its force is directly proportional to slope inclination, the soils plasticity, water content and expansion potential. Creep issues are discussed briefly in this report, and will be discussed in more detail in a future site-specific Geotechnical Study report.

Natural drainage consists of overland flow that concentrates on natural drainage elements such as swales, ravines and creeks. The natural drainages from the site trend

westerly into a deep ravine that trends southwesterly through the northwestern portion of the subject parcel. The ravine trends off the parcel and into a second 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.

Subsurface

Our subsurface exploration indicates the project site is underlain by both non-landslide and landslide terrain. In non-landslide terrain, the surface soils range in thickness from about 2 to 4 feet thick and consist of weak, porous and compressible clayey and gravelly topsoil. Porous topsoil generally appears hard and strong when dry but becomes weak and compressible as their moisture content increases towards saturation. Porous topsoil can be considered to be actively creeping, such as found on the steeper ravine slopes southwest of the proposed winery, or creep-prone. In general, surface materials are considered prone to creep on hillsides through most of the site sloping at 5H:1V or steeper.

In non-landslide terrain, Franciscan Complex bedrock extends from beneath the surface materials to the maximum depths explored (6 to 104 feet). The bedrock consists of the melange unit, and generally consists of intermixed graywacke sandstone and sheared shale. Melange is formed by tectonic processes, and by definition generally consists of fragments and blocks (some exotic) of various rock types embedded in a fragmented and generally sheared matrix. The graywacke sandstone is generally firm to hard, friable to strong and fresh to slightly weathered. The graywacke is matrix and rock supported, and exhibits extremely close to closely spaced fractures and quartz veining. Local saccharoidal (sugary) texture was observed from 27 to 35 feet in Boring 3 only, and increased in appearance below 35 feet to the maximum depth explored (63 feet). The sheared shale is generally firm to moderately hard, plastic to weak and fresh to slightly weathered. The sheared material is locally foliated and matrix supported, and exhibits

extremely closely spaced fractures and quartz veining. Few distinct and continuous fracture planes were observed within the Franciscan rocks and bedding is generally absent.

Active landslide debris was encountered in Test Pits 7 and 11 excavated at the head of a ravine and swale, respectively. The debris is about 3½ feet thick and is generally clayey with high plasticity. The active landslide at Test Pit 7 is underlain by bedrock of the Franciscan Complex, while the landslide at Test Pit 11 is underlain by ancient landslide debris.

Test Pits 9 through 16 excavated northwesterly, north and northeasterly of the winery site revealed the presence of landslide debris. Test Pits 9 through 12 excavated northwest of the winery revealed the presence of about 5 feet or more of colluvium overlying ancient landslide debris. The colluvium generally comprises clayey soils and exhibits moderate to high plasticity, locally light to moderate seepage conditions and low strengths. These test pits (9-12) bottomed into ancient landslide debris to the maximum depths explored (12 feet). Test Pits 14 through 17 excavated within the north-northeastern portion of the winery project encountered colluvium to a depth of about 6½ feet and overlies dormant landslide debris. The colluvium differs from the description above in that it exposes moderate to heavy seepage and the unit is actively creeping. Dormant landslide debris was encountered from below the creeping colluvium to the maximum depths explored (13½ feet) in Test Pits 14 through 16.

The dormant and ancient landslide debris generally consists of sheared, shattered shale that is firm to moderately hard, plastic to weak and moderately weathered. Fractures are generally very closely to extremely closely spaced. We observed features including talc streaks and stringers, root mats and local pinched clay seams within the landslide debris. Within the dormant landslide on the north-northeast, Test Pits 14 through 16 bottomed on the dormant landslide debris. Test Pit 17, excavated in the headscarp area of the dormant landslide, we encountered sheared shale of the Franciscan Complex below the creeping colluvium.

A detailed description of subsurface conditions found in our core borings and test pits is given on Plates 7 through 28, Appendix A, and Plates 6 through 8, Appendix C.

Groundwater

Free groundwater seeped into Test Boring 3 of our original study below a depth of approximately 27 feet at the time of drilling. The seepage occurred within fractures in the Franciscan Complex bedrock materials. We did not observe evidence of groundwater seepage in Test Boring 2 of our original study. It should be noted that Core Boring 1 of our original study and our supplemental core borings may have encountered groundwater. However, the core borings were drilled using rotary wash drilling techniques, which involves circulating drilling fluid to help clean cuttings and advance the hole. Unless bore holes drilled with this method are flushed and a piezometer constructed, groundwater levels cannot be accurately measured. Locally, free groundwater seeped into test pits excavated on March 11 through 13, 2008, at various depths. Seepage generally was observed locally within and along the contacts between the colluvium and landslide debris. On hillsides, rainwater typically percolates through the porous surface materials and migrates downslope in the form of seepage at the interfaces of the surface materials including landslide debris, the bedrock, and through fractures and discontinuities in the bedrock. Fluctuations in the seepage rates typically occur due to variations in rainfall intensity, duration and other factors.

DISCUSSION AND CONCLUSIONS

Seismic Hazards

General

We did not observe subsurface conditions within the portion of the property we studied that would suggest the presence of materials that may be susceptible to seismically induced densification or liquefaction. Therefore, we judge the potential for the occurrence of these phenomena at the winery site to be low.

Faulting

There are faults mapped in close proximity to the site. As previously discussed, CGS (Huffman and Armstrong, 1980) shows an unnamed thrust fault that extends northwesterly through the northern portion of the subject parcel, and a parallel fault mapped approximately 1.3 miles to the southwest. An easterly-westerly fault that branches off the thrust fault is mapped approximately 700 to 800 feet to the southeast of the subject parcel. The branch fault shows a dip angle of 60 degrees northerly. Two short, northeasterly-trending faults are mapped approximately 300 feet southeast and between 4500 and 5000 feet northwest of the parcel. All of these faults are said to show evidence of faulting during the Pleistocene-age (700,000 to 2 million years) in Bortugno (1982).

Recent geologic mapping of the adjacent Mark West Springs 7½ minute quadrangle by Mr. Robert McLaughlin of the USGS is published as Scientific Investigations Map (SIM) 2858 (2004). SIM 2858 indicates the formerly unnamed thrust fault is the Petrified Forest Thrust (PFT) zone. Our personal communication with Mr. McLaughlin (2006) indicates 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 rupture was observed. The dip of the contact was not determined during mapping.

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 (Bryant and Hart, 2007). Active faults are defined by the CGS as one which has had surface displacement within Holocene time (last 11,000 years). 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. However, the site is within an area affected by strong seismic activity. Several northwest-trending Earthquake Fault Zones exist in close proximity to, and within several miles of, the site (Bortugno, 1982; Brown, 1970; Helley and Herd, 1977). The shortest distances from the site to the mapped Earthquake Fault Zones are presented below in Table 1.

TABLE 1
ACTIVE FAULT PROXIMITY

Fault	Direction	Distance-Miles
San Andreas	SW	28½
Healdsburg-Rodgers Creek	SW	7
Redwood Hill	W-NW	7½
Yountville Earthquake of 2000	SE	13
West Napa	SE	14
Maacama	NW	8

Seismicity

Data presented by the Working Group on California Earthquake Probabilities (2007) estimates the chance of one or more large earthquakes (Magnitude 6.7 or greater) in the San Francisco Bay region within the next 30 years to be approximately 63 percent.

Therefore, future seismic shaking should be anticipated at the site. It will be necessary to design and construct the proposed winery and related improvements in strict adherence with current standards for earthquake-resistant construction, as will be recommended in a future Geotechnical Study.

Lurching

Seismic slope failure or lurching is a phenomenon that occurs during earthquakes when slopes or man-made embankments yield and displace in the unsupported direction. Provided the proposed fills and foundations, as applicable, are adequately keyed into underlying bedrock material, as will be recommended in a future Geotechnical Study report, we judge the potential for impact to the proposed winery from the occurrence of these phenomena at the winery site is low to moderate. Some of these secondary earthquake effects are unpredictable as to location and extent, as evidenced by the 1989 Loma Prieta Earthquake. A site-specific Geotechnical Study report will be completed once the actual building placement, elevations and related improvements are near completion.

Landslides

As previously discussed, CGS and USGS maps indicate the presence of landslides in the vicinity of, but not at, the proposed winery site. The discussion below summarizes mapping by CGS and USGS, and then follows with our own discussion of landsliding observed at and around the proposed winery site.

There are three landslides mapped in the vicinity by Huffman and Armstrong (1980). The very large landslide to the northeast is shown to extend southwestward along the eastern subject parcel boundary and encompasses the knoll top uphill of the proposed winery site. Our reconnaissance indicates this knoll top is underlain by Franciscan Complex bedrock. The landslide shown by Dwyer (1976) is shown to be much smaller in size, and

based on our reconnaissance and aerial photograph review, we generally tend to agree with Dwyer's interpretation. The nearest portion of this landslide is approximately 500 feet away and on ridge flanks facing the opposite direction (easterly) of the winery site.

The second landslide, mapped on the far western parcel boundary by Huffman and Armstrong (1980), is not shown on Dwyer's (1976) map. Our test pits excavated in the area confirm the presence of this landslide mapped by Huffman and Armstrong (1980).

The third landslide, which is queried by Huffman and Armstrong (1980) and not confirmed by Dwyer's mapping, is located approximately 1000 feet to the east of the proposed winery site. This landslide is located past two ravines and a prominent ridge, and due to the distance and proximity, we judge this landslide will have no impact on winery construction.

During our study, we encountered active, dormant and ancient mapped and unmapped landslides at the site (see Plate 4). The two active landslides are small, rotational landslides or earth slumps that are less than 5 feet in depth. They are found at the head of a ravine southwest of the proposed winery access road, and within a shallow swale far downhill of the proposed winery.

We also encountered dormant and ancient landslides that feature rounded and subdued geomorphic features and locally dense re-vegetation. The ancient landslide on the northwest is situated nearly 200 feet downhill of the proposed winery. We did not explore the site to confirm the lower landslide limits as this area is far outside the proposed improvements. The ancient landslide exhibits rotational, or concave upward, movement which produces a curved shear surface. We estimate the ancient landslide likely exceeds a depth of 25 feet.

The dormant landslide on the north-northeast extends onto the northern end of the new proposed winery configuration, a portion of the cave and roadway. The dormant landslide appears to be a translational feature, which is sliding along a roughly planar surface that is parallel with the ground surface. Preliminarily, we estimate the middle and lower portions of this landslide to be in the 15- to 25-foot depth range but will need to be verified during a site specific geotechnical study.

SUMMARY

Based upon the results of our geologic data review, site reconnaissance's and subsurface explorations, we judge that it is currently geologically and geotechnically feasible to construct a winery and related improvements at the planned site. Creep and creep prone soils and shallower landslides can be mitigated during the normal course of grading. Avoiding or setting structures back from landslides is also a feasible mitigation. The dormant translational landslide on the north-northeastern portion of the proposed winery will require reconstructing portions or the entire landslide, depending on the planned grading, as drained, buttressed fills bearing below the landslide plane. The primary geotechnical considerations and potential mitigating measures recommended for winery site development, including constructing buttressed fills on sloping terrain and reconstructing landslides, as appropriate, will be addressed during a detailed site-specific Geotechnical Study and geotechnical engineering evaluation, as recommended herein. Based on modifications to the current plan, supplemental exploration and laboratory testing may be required to complete the geotechnical study report.

Geotechnical Issues

Downslope Creep

Weak, actively creeping and creep-prone surface soils (colluvium), such as those found at the site, tend to naturally consolidate and settle on sloping terrain that is 5H:1V or steeper. Typically, winery structures built on hillside terrain require excavating the high areas and filling the low areas to create level building pads for construction of the slab floors. Fills

deriving support from the creep-prone materials will be susceptible and contribute to accelerated downslope creep and settlement unless the fills are properly embedded in bedrock and buttressed (keyed, benched, drained and compacted). The settlement causes cracks in the slabs and foundations, and structural distress in the form of cracked concrete walls and/or plaster, sticky doors and windows, and distressed paved areas. Therefore, it will be necessary to obtain fill and/or foundation support below the creeping soils. Where creeping soils are not strengthened by remedial grading, foundations will need to be designed to resist stresses imposed by the creeping soils. In proposed building areas underlain by landslide debris, said areas will need to be reconstructed and strengthened by remedial grading, as discussed in the Fill Support section of this report. A stability analysis of areas with varying fill heights will be performed during the geotechnical study phase.

Expansive Bedrock

Sheared shale bedrock at the site is judged to be locally expansive. These materials will be exposed during site grading. Expansive materials shrink and swell as they lose and gain moisture throughout the yearly weather cycle. Near the surface, the resulting movements can heave and crack lightly loaded shallow foundations (spread footings), slabs and pavements. The zone of significant moisture variation (active layer) is dependent on the expansion potential of the soil and/or bedrock and the extent of the dry season. Stable foundation support will need to be obtained below this layer. Cut slopes in these materials will need to be constructed no steeper than 3H:1V and will be further evaluated during the geotechnical study.

Fill Support

Hillside fills need to be constructed on level keyways and benches excavated entirely into bedrock. However, regardless of the care used during grading, buttressed fills of uneven

thickness such as those typically built on hillsides, will settle differentially. Satisfactory performance of structural elements constructed on hillside fills will require the use of specialized grading techniques that will be summarized during a site-specific Geotechnical Study. These include excavating all creeping soils, and replacing said materials as a buttressed fill of even thickness or constructing said improvements entirely on cut and below creep-prone materials. Fill slopes constructed with expansive materials will need to be inclined at 3H:1V or flatter.

Fill support in areas of landsliding will need to be treated similarly. Fills planned in landslide areas will need to be keyed and benched into firm bedrock materials found below the landslide plane. The fills should be constructed as engineered, drained buttresses. In areas where planned excavations do not extend below the landslide plane, the landslide debris needs to be removed in its entirety and replaced as compacted fill to planned grades, as previously discussed.

Foundation Support

Satisfactory foundation support for winery structures and related improvements can be obtained from deep spread footings that bottom at minimum depth on firm bedrock exposed by planned excavations or from spread footings supported on buttressed fills of equal thickness and comprised of materials with low expansion potential (select fill). Where the creeping soils are not buttressed or removed by grading the footings must be designed to resist creep forces.

As an alternative, drilled piers gaining support in bedrock and designed to resist creeping forces, as needed, can be used for foundation support either under all parts of the structure or within areas of deep soils or buttressed fill of uneven thickness.

Foundations in areas underlain by landslides will need to be supported on engineered fill buttresses or in cut areas below the landslide debris, as previously discussed.

Recommendations for foundation design will be presented in a future geotechnical study report for the project.

Slabs and Pavement Support

In general, slabs-on-grade and pavements will heave and crack as the expansive soils shrink and swell through the yearly weather cycle. Slab and pavement cracking and distress are typically concentrated along edges where moisture content variation is more prevalent within subgrade soils. Slab and pavement performance and the incidence of repair can be reduced by covering the pre-swelled expansive soils with select fill prior to constructing the slabs or pavements, or by constructing moisture cutoff barriers.

Access Roads

The proposed roadway alignment extends off Wappo Road and wraps around the downhill western portion of the project, splits into two parallel roads through the proposed winery and merges with an existing dirt road that extends back up to Wappo Road. Road elevations are not known at this time however, we anticipate local ravines will need to be filled and uphill cuts made to construct the roads. The north-northeastern portions of the roads extend across a dormant landslide. In order to construct the roads as shown, the upper portion of the dormant landslide will have to be reconstructed as an engineered fill buttress beginning at the toe of the planned fills. Final roadway design recommendations will be included in a site-specific Geotechnical Study. In general, roadways should be aligned to avoid steep slopes and areas of potential instability in order to reduce construction costs and future maintenance.

Erosion and Site Drainage

The long-term satisfactory performance of winery improvements and roadways constructed on hillsides results primarily from strict control of surface runoff and subsurface seepage. The site's surface soils have a moderate to high erosion potential depending on slope inclination. Uncontrolled erosion could induce sloughing, new landsliding or landslide reactivation. Roof downspouts from the future winery improvements should discharge into closed glued pipes that empty away from steep and/or potentially unstable areas. Discharge for downspout points, roadway culverts and ditches and storm drain outfalls will need to be protected against erosion and sloughing by installing energy dissipators and piping the collected waters downhill to planned discharge facilities, as appropriate.

Groundwater

Free groundwater seeps were observed locally within the shallow ravines bordering the dormant landslide deposit. We also observed phreatophyte grasses, generally associated with spring activity, on the far western portion of the surveyed site (Plate 4). On hillsides, rainwater typically percolates through the porous surface materials and migrates downslope in the form of seepage at the interfaces of the surface materials including landslide debris, bedrock, and through fractures and discontinuities in the bedrock. Fluctuations in the seepage rates typically occur due to variations in rainfall intensity, duration and other factors.

Supplemental Services

We should prepare a detailed, site-specific Geotechnical Study report during the final design and construction of the winery and roadways. The study may require supplemental

subsurface exploration, laboratory testing, and engineering analyses. The Geotechnical Study should address specific design of the winery improvements and access roads, and the data generated should be incorporated into the approved project plans. The plans should then be reviewed by the geotechnical engineer and/or engineering geologist prior to receiving bids for the planned work.

If more than 18 months have elapsed since the submission of this report, the conclusions and recommendations made in this report may no longer be valid or appropriate. In such case, we recommend that we be retained to review this report and verify the applicability of the conclusions and recommendations or modify the same considering the time lapsed or changed conditions. The validity of conclusions and recommendations made in this report is contingent upon such review.

These supplemental services are performed on an as-requested basis and are in addition to this preliminary geotechnical study. We cannot accept responsibility for items that we are not notified to observe or for changed conditions we are not allowed to review.

LIMITATIONS

This report has been prepared by RGH for the exclusive use of Cornell Farms, LLC and their consultants to evaluate the preliminary geologic feasibility of winery development on the subject site.

Our services consist of professional opinions and conclusions developed in accordance with generally accepted geotechnical engineering principles and practices. We provide no other warranty, either expressed or implied. Our conclusions and preliminary recommendations are based on the information provided to us regarding the proposed winery development, the results of our field reconnaissance, deep subsurface exploration and data review, and our professional judgment. As such, our conclusions and recommendations discussed above should be considered preliminary and for feasibility and

planning purposes only. Following our receipt of the site plan showing the actual layout of the winery and related improvements with elevations and supplemental subsurface exploration, such as recommended herein, local conditions may be different from those inferred by our previous work. Such subsurface study may warrant a revision to our preliminary conclusions and geotechnical issues discussed above.

Site conditions and cultural features described in the text of this report are those existing at the time of our site reconnaissance on August 26, 2005, and our field explorations on November 8 through 14, 2005, December 12 through 13, 2005, September 27, 2006, November 15 through 18, 2006 and March 11 through 13, 2008, and may not necessarily be the same or comparable at other times.

It should be understood that slope failures including reactivation of landslides, new landslides, debris flows and erosion are on-going natural processes which gradually wear away the landscape. Residual soils and weathered bedrock can be susceptible to downslope movement, even on apparently stable sites. Such inherent hillside and slope risks are generally more prevalent during periods of intense and prolonged rainfall, which occasionally occur in northern California and/or during earthquakes. Therefore, it must be accepted that occasional slope failure, reactivation of landslides and erosion and deposition of the residual soils and weathered bedrock materials are irreducible risks and hazards of building upon or near the base of any hillside or steep slope throughout northern California. By accepting this report, the client and other recipients acknowledge their understanding and acceptance of these risks and hazards.

The scope of our services did not include an environmental assessment or a study of the presence (or absence) of hazardous, toxic or corrosive materials in the soil, surface water, groundwater or air on, below, or around this site, nor did it include an evaluation or study for the presence (or absence) of wetlands.

APPENDIX A - PLATES

LIST OF PLATES

Plate 1	Site Location Map
Plates 2A and 2B	CGS Geologic Map
Plates 3A and 3B	CGS and USGS Landslide Maps
Plate 4	Site Geologic Map
Plates 5A and 5B	Geologic Cross Sections
Plate 6	Exploration Plan
Plates 7 to 11	Test Pit Logs 1 through 5 (09-27-06)
Plates 12 to 16	Core Borings 1 through 5 (12-15 to 18, 2006)
Plates 17 to 28	Test Pit Logs 6 through 17 (03-11 to 13, 2008)
Plate 29	Soil Classification Chart and Key to Test Data
Plate 30	Engineering Geology Rock Terms

Reference: Maptech TopoQuad, Calistoga, California Quadrangle

Scale: 1" = 1000'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: gp Drwn: tl Date: April 2008	**SITE LOCATION MAP** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 1

SYMBOLS

Contact; solid line where well located, long dash where approximately located, short dash where inferred (gradational in the Calistoga 15 minute quadrangle), dotted where concealed; query indicates additional uncertainty.

Fault; solid line where well located, long dash where approximately located, short dash where inferred, dotted where concealed; query indicates additional uncertainty. Arrow and number indicate direction and amount of dip in degrees. Whether or not the fault is active or poses any hazard to man is generally unknown. Only crosscutting faults are shown within KJfs, although most contacts therein probably are faults.

Strike and dip of bedding inclined

EXPLANATION

Sonoma Volcanics Group
(not necessarily in stratigraphic sequence.)

Pliocene

- Tsa — Andesitic to basaltic lava flows
- Tst — Pumicitic ash-flow tuff, locally welded or partly welded with intercalated bedded agglomeritic tuff, andesitic or basaltic lava flows, tuff breccia, bedded tuff, and pumicitic tuff
- Tss — Sedimentary deposits; unconsolidated interbedded and interfonguing tuffaceous sand, silt, volcanic gravel; bedded tuff, clay, diatomite

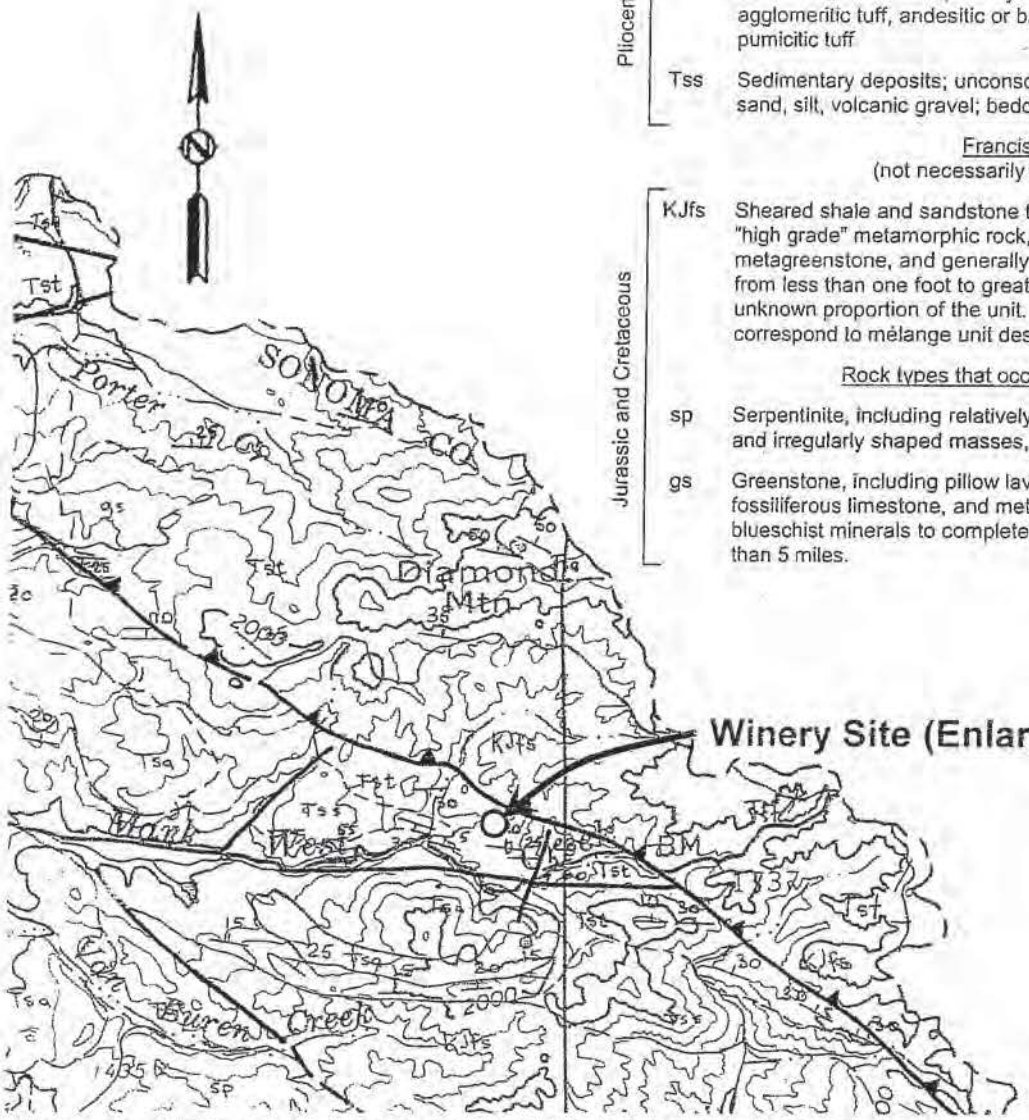
Franciscan Assemblage
(not necessarily in correct time sequence.)

Jurassic and Cretaceous

- KJfs — Sheared shale and sandstone that contains generally resistant masses of chert, "high grade" metamorphic rock, variable shattered sandstone and greenstone, metagreenstone, and generally less resistant serpentinite; masses range in length from less than one foot to greater than 5 miles, and constitute a variable, generally unknown proportion of the unit. Potassium feldspar generally absent. Parts of unit correspond to mélange unit described by Hsu (1969).

Rock types that occur as discrete masses, chiefly within KJfs.

- sp — Serpentinite, including relatively fresh ultramafic masses. Occurs as lenses, sheets, and irregularly shaped masses, largely within and along boundaries of KJfs.
- gs — Greenstone, including pillow lava, tuff, minor intrusive varieties, and minor fossiliferous limestone, and metagreenstone ranging from rock containing incipient blueschist minerals to completely reconstituted blueschist. Masses range to longer than 5 miles.



Reference: Huffman and Armstrong (1980), "Geology for Planning in Sonoma County," CDMG Special Report 120, Plate 3A.

Scale: 1:62,500

RGH Consultants, Inc.	Job No: 2096.02.04.1 Appr: gp Drwn: jj Date: APR 2008	**CGS GEOLOGIC MAP** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE **2A**

SYMBOLS

Contact; solid line where well located, long dash where approximately located, short dash where inferred (gradational in the Calistoga 15 minute quadrangle), dotted where concealed; query indicates additional uncertainty.

Fault; solid line where well located, long dash where approximately located, short dash where inferred, dotted where concealed; query indicates additional uncertainty. Arrow and number indicate direction and amount of dip in degrees. Whether or not the fault is active or poses any hazard to man is generally unknown. Only crosscutting faults are shown within KJfs, although most contacts therein probably are faults.

Strike and dip of bedding: inclined

Thrust fault; dashed where approximately located, queried where doubtful. Sawteeth on upper plate.

EXPLANATION

Sonoma Volcanics Group
(not necessarily in stratigraphic sequence.)

Pliocene

Tsa	Andesitic to basaltic lava flows
Tst	Pumicitic ash-flow tuff, locally welded or partly welded with intercalated bedded agglomeritic tuff, andesitic or basaltic lava flows, tuff breccia, bedded tuff, and pumicitic tuff
Tss	Sedimentary deposits; unconsolidated interbedded and intertonguing tuffaceous sand, silt, volcanic gravel; bedded tuff, clay, diatomite

Franciscan Assemblage
(not necessarily in correct time sequence.)

Jurassic and Cretaceous

KJfs	Sheared shale and sandstone that contains generally resistant masses of chert, "high grade" metamorphic rock, variable shattered sandstone and greenstone, metagreenstone, and generally less resistant serpentinite; masses range in length from less than one foot to greater than 5 miles, and constitute a variable, generally unknown proportion of the unit. Potassium feldspar generally absent. Parts of unit correspond to mélange unit described by Hsu (1969).

Rock types that occur as discrete masses, chiefly within KJfs.

ch	
sp	Serpentinite, including relatively fresh ultramafic masses. Occurs as lenses, sheets, and irregularly shaped masses, largely within and along boundaries of KJfs.
gs	Greenstone, including pillow lava, tuff, minor intrusive varieties, and minor fossiliferous limestone, and metagreenstone ranging from rock containing incipient blueschist minerals to completely reconstituted blueschist. Masses range to longer than 5 miles.

EXPLANATION

Relative Slope Stability Categories

Zones of increasing natural slope stability — Decreasing hazard

Landslides

Areas of lowest relative slope stability. Failure and downslope movement of rock and soil has occurred, or may have occurred ("possible" landslides).

C

Areas of relatively unstable rock and soil units, on slopes greater than 15%, containing abundant landslides.

Bf

Locally level areas within hilly terrain; may be underlain or bounded by unstable or potentially unstable rock materials.

Note: Geologic conditions in areas labeled Bf, B, C, and landslides mandate that engineering geology reports must be required prior to tentative tract approval for land use planning and land development.

Note: Categories are interpretive and apply generally to large areas. Within each area conditions may range in detail through all four stability categories. Hence, an A area may locally contain unmapped landslides, and a landslide area may contain stable slopes of slight inclination.

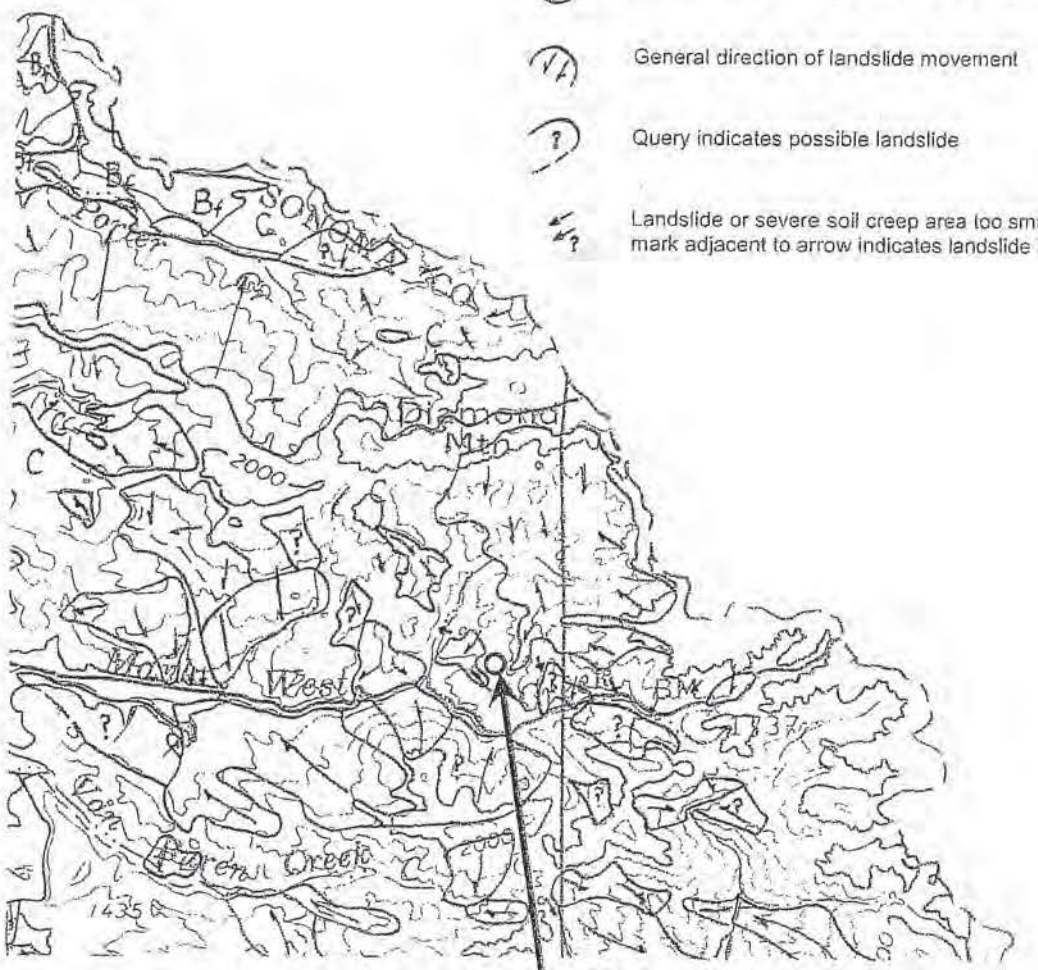
Landslide Symbols

Contact between landslide deposits; landslide and more stable ground; or areas of differing slope stability. Dashed line indicates an approximate location.

General direction of landslide movement

Query indicates possible landslide

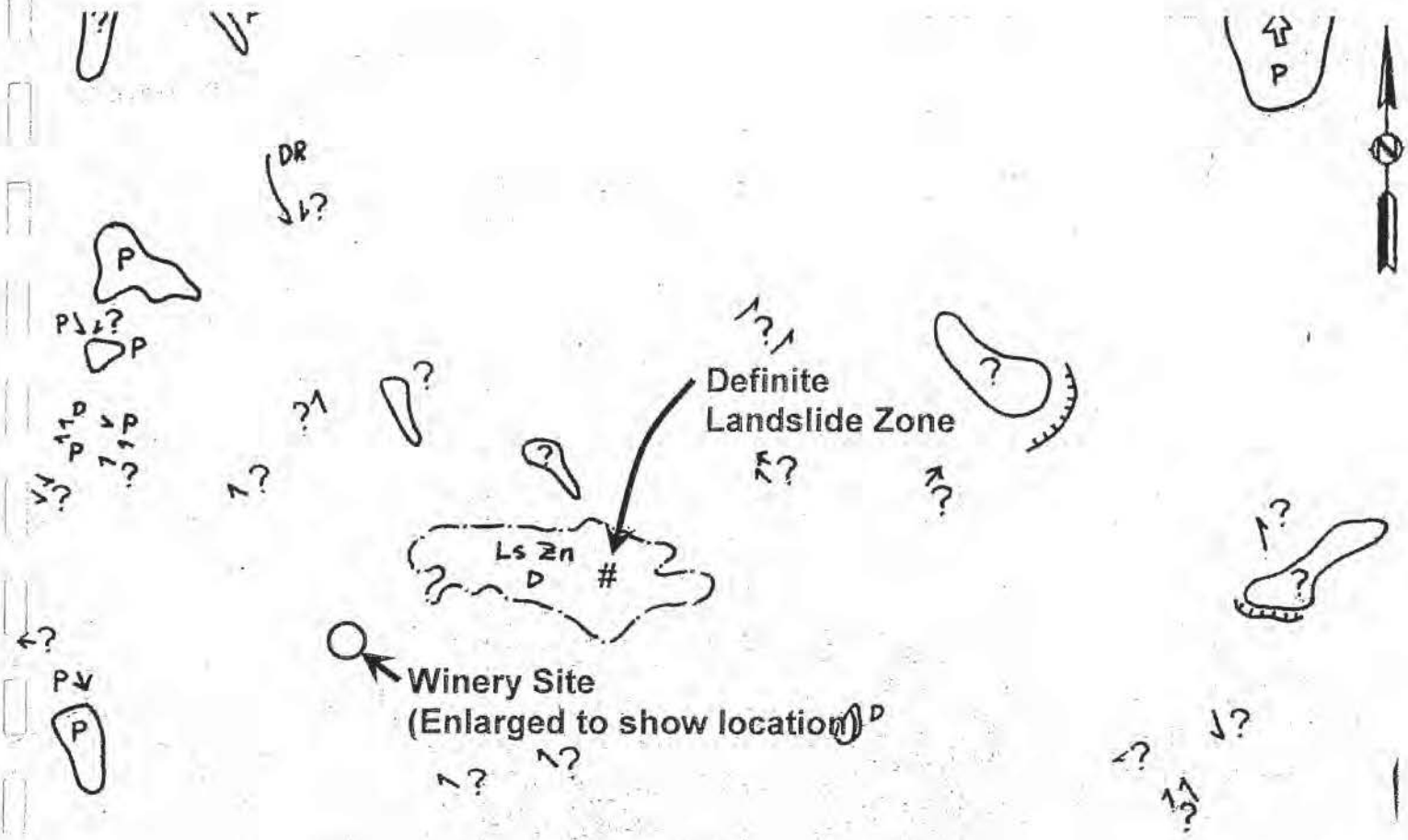
Landslide or severe soil creek area too small to be outlines at the map scale. Question mark adjacent to arrow indicates landslide is uncertain, or "possible."



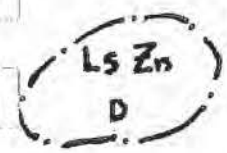
Reference: Huffman and Armstrong (1980), "Geology for Planning in Sonoma County," CDMG Special Report 120, Plate 2A.

Scale: 1:62,500

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: go Drwn: tl Date: April 2008	**CGS LANDSLIDE MAP** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 3A



Symbols Used



LANDSLIDE ZONE:

Slide area consisting of numerous coalesced and superposed landslides of various sizes, types of movement, and degrees of activity. Because of spatial complexity, it is generally not feasible to delineate individual slides composing these zones. Meaning of symbols: D, P, and A are the same as of LARGE LANDSLIDE DEPOSITS (see below). The following symbols are used only for the LANDSLIDE ZONES: D-DA, landslide zone consist of primarily DEFINITE TO DEFINITE and ACTIVE landslide deposits; P-?, landslide zone consists of primarily PROBABLE to QUESTIONABLE landslide deposits.

LARGE LANDSLIDE DEPOSITS:

Landslide which is 50 feet or more in maximum dimension. Arrows indicate general direction of downslope movement (omitted for lack of space on some landslides and on all questionable landslides). Single barbed arrows indicate primarily flow movement. Capital letters shown on each landslide have the following designations: D, DEFINITE landslide deposits; P, PROBABLE landslide deposits. Hachured lines show the approximate position of inferred landslide scarps. Topographic features whose outlines are subdued by weathering and/or largely obscured by vegetation but whose overall form is suggestive of landslide origin are called questionable landslides (? On map).

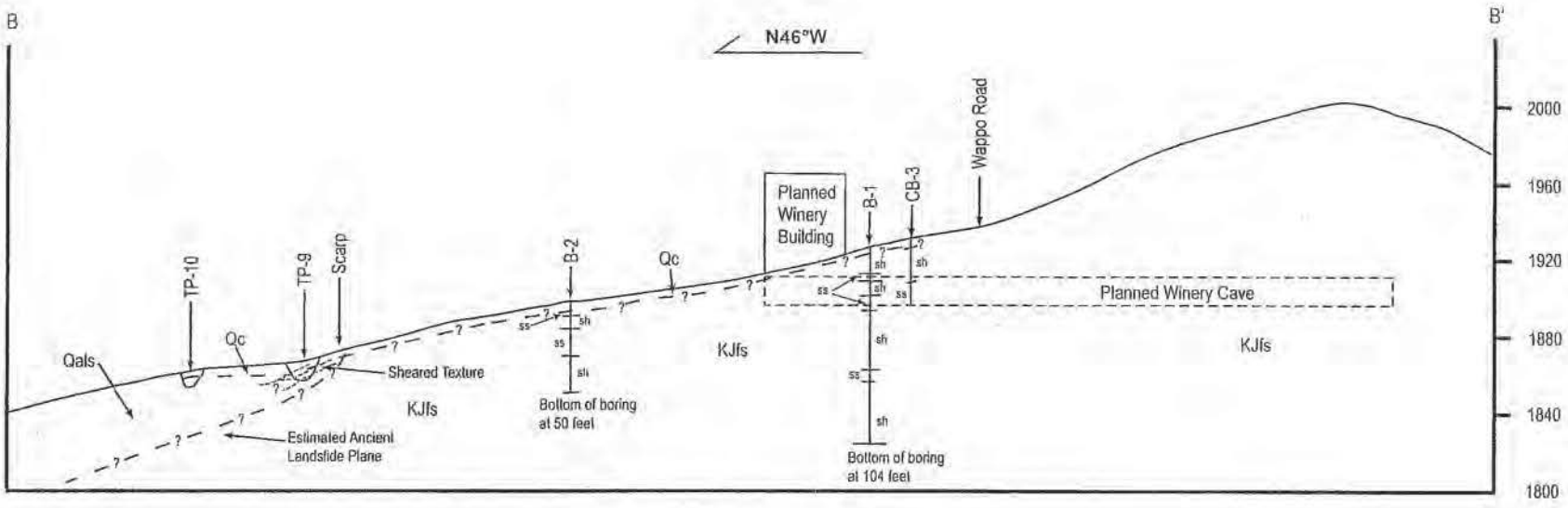
SMALL LANDSLIDE DEPOSITS:

100 to 500 feet in maximum dimension. Arrows indicate general direction of downslope movement and are centered over the location of deposits. Meaning of symbols: arrows, D, P, ? are the same as for LARGE LANDSLIDE DEPOSITS (see above).

Reference: Dwyer, Noguchi, and O'Rourke (1976), "Reconnaissance Photo-Interpretation Map of Landslides in 24 Selected 7.5-Minute Quadrangles in Lake, Napa, Solano, and Sonoma Counties," USGS. OFR 76-74. **Scale:** 1:24,000

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: go Drwn: tl Date: April 2008	**USGS LANDSLIDE MAP** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE **3B**

Explanation
Qls Active Landslide
Qdls Dormant Landslide
Qals Ancient Landslide
Qc Colluvium
Ts Sonoma Volcanics
KJfs Franciscan Complex
Cong Conglomerate
SS Sandstone
Approximate location of fault; queried where uncertain
Surface contact between rock units
Wet ground
Location of Cross Section (See Appendix C, this report for Cross Section A)
66° Strike and dip of bedding; inclined
34° Strike and dip of fractures; inclined
Strike of fractures; near vertical
Creep
80 0 80 160 feet
A
A'
B
B'
C
C'
Ts
Qals
Qls
Qdls
Qc
KJfs
Cong
SS
Reference: Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 9/4/07.
Job No: 2096.02.01.1
Appr:
Drwn:
Date: Apr 2008
RGH Consultants, Inc.
SITE GEOLOGIC MAP
Cornell Winery
245 Wappo Road
Santa Rosa, California
PARTIAL SITE PLAN



Explanation

Qc Colluvium

Qals Ancient Landslide Debris

KJfs - Franciscan Complex
sh - Sheared Shale
ss - Sandstone

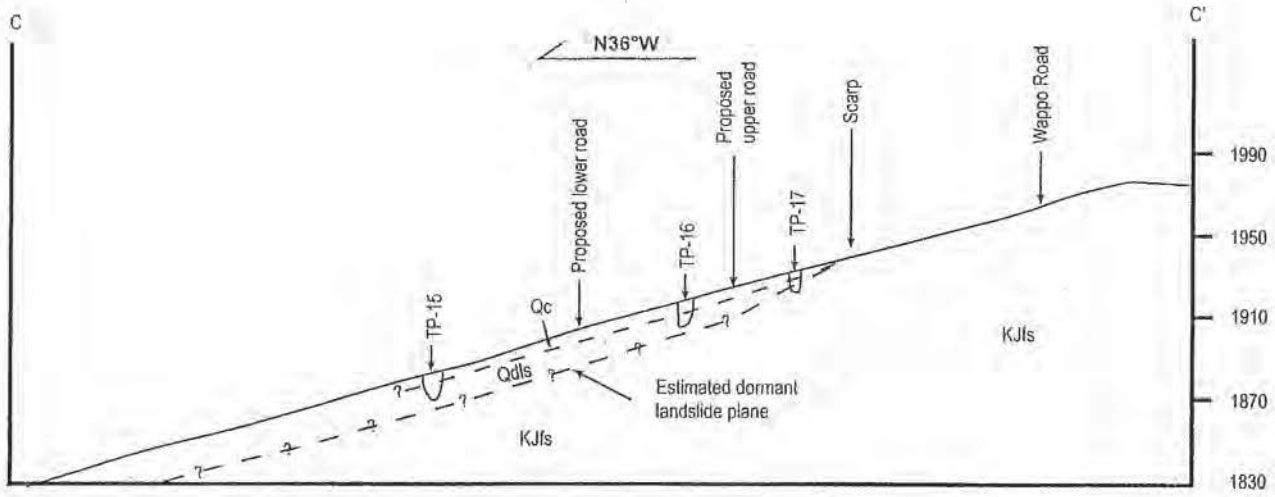
Note:

1. Winery Finished Floor Elevations To Be Determined During Design
2. Cave Floor Elevation To Be Determined During Design
3. CB-3 Projected 16'NE
   B-1 Projected 13'SW
   B-2 Projected 20'SW
   TP-9 In line of cross section
   TP-10 Projected 17'NE

60 0 60 120 feet

Elevations determined from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 60'

R G H Consultants, Inc.	Job No: 2096.02.01.1 Appr: Drwn: ll Date: Apr 2008	CROSS SECTION B - B' Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 3



Explanation

Qc	Colluvium with Areas of Active Creep
Qdls	Dormant Landslide Debris
KJfs	Franciscan Complex, Sheared Shale

Note:
1. TP-17 Projected 20' SW
   TP-16 In line of cross section
   TP-15 Projected 21' NE

60 0 60 120 feet

Elevations determined from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" =

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: gr Drwn: tl Date: Apr 2008	CROSS SECTION C - C' Cornell Winery 245 Wappo Road Santa Rosa, California	PL 5

Subsurface Exploration
Borings 1-3 (05-31-06 Report)
(See Appendix C, this report)
Core Borings 1-5 (12-15 to 18-06)
Test Pits 1-5 (09-27-06)
Test Pits 6-17 (03-11 to 13-08)
Location of Geologic Cross Sections (See Appendix C, this report for Cross Section A)
A
A'
B
B'
C
C'
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-11
TP-12
TP-13
TP-14
TP-15
TP-16
TP-17
CB-1
CB-2
CB-3
CB-4
CB-5
B-1
B-2
(05-31-06 report)
B-3
(05-31-06 report)
KJfs
Qdls
Qls
Qc
SS
Cong
80 0 80 160 feet
Note: Key geologic features from Plate 4, Site Geologic Map, have been transferred to this plate for clarity to the reader. Please refer to the Explanation provided on Plate 6 for identification of features.
Reference: Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 9/4/07.
Scale: 1" = 80'
RGH Consultants, Inc.
Job No: 2096.02.01.1
Appr: ga
Drwn: II
Date: Apr 2008
EXPLORATION PLAN
Cornell Winery
245 Wappo Road
Santa Rosa, California
PLATE
1 PARTIAL SITE PLAN

EQUIPMENT: Deere 160C LC Excavator with a 36-inch bucket

LOGGED BY: GDS DATE: 9-27-06

EXCAVATOR: Mora Construction ELEVATION: 1905.00 *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Sample	DEPTH (FEET)	
					0	BROWN GRAVELLY CLAY (CL), medium stiff, dry; porous, with sandstone rock fragments and abundant roots in upper 1 foot (Colluvium).
					1	
					2	MOTTLED BROWN SANDY CLAY (CL), medium stiff, moist (Residual Soil).
					3	BROWN SANDSTONE, locally very thinly bedded, very closely spaced fractures, moderately hard to hard, moderately strong, slightly weathered; locally blue gray and orange mottle, locally moderately weathered, dark brown and black staining on fracture surfaces (Franciscan Complex).
					4	
					5	Excavation resistance increases below 5 feet.
					6	Bottom of test pit at 6 feet. No free groundwater seepage observed.

* Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007

R G H Consultants, Inc.

Job No: 2096.02.01.1

Appr: gp

Drwn: tl

Date: April 2008

LOG OF TEST PIT TP-1

Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 7

EQUIPMENT: Deere 160C LC Excavator with a 36-inch bucket

LOGGED BY: GDS DATE: 9-27-06

EXCAVATOR: Mora Construction ELEVATION: 1904.00 *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Sample	DEPTH (FEET)	
					0	BROWN SANDY CLAY (CL), medium stiff, dry; porous, with sandstone rock fragments and roots (Colluvium).
					1	
					2	MOTTLED YELLOW AND ORANGE BROWN SANDY CLAY (CL), stiff, moist; contains sandstone rock fragments (Residual Soil).
					3	BROWN SANDSTONE, very closely spaced fractures, variably firm to moderately hard, friable to moderately strong, moderately weathered; contains zones of bluish gray clay near top of unit (Franciscan Complex).
					4	
					5	
					6	
					7	Bottom of test pit at 7 feet. No free groundwater seepage observed.

* Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007

RGH Consultants, Inc.

Job No: 2096.02.01.1
Appr: gp
Drwn: tl
Date: April 2008

LOG OF TEST PIT TP-2
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 8

EQUIPMENT: Deere 160C LC Excavator with a 36-inch bucket

LOGGED BY: GDS DATE: 9-27-06

EXCAVATOR: Mora Construction ELEVATION: 1926.00 *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Sample	DEPTH (FEET)	
					0	BROWN SANDY CLAY (CL), medium stiff, dry; porous, contains small sandstone rock fragments (Topsoil).
					1	
					2	MOTTLED DARK GRAY SANDY CLAY (CH), stiff, moist; abundant tacky and shiny polished surfaces (Residual Soil).
					3	
					4	DARK GRAY AND BLUE GRAY SHEARED SHALE, closely to extremely closely spaced fractures, firm, plastic to friable, fresh to slightly weathered; foliated, with inclusions of moderately hard sandstone fragments, talc patches (Franciscan Complex).
					5	
					6	
					7	
					8	
					9	

* Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007

RGH Consultants, Inc.

Job No: 2096.02.01.1

Appr: gp

Drwn: tl

Date: April 2008

LOG OF TEST PIT TP-3

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 9A

EQUIPMENT: Deere 160C LC Excavator with a 36-inch bucket

LOGGED BY: GDS DATE: 9-27-06

EXCAVATOR: Mora Construction ELEVATION: 1926.00 *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Sample	DEPTH (FEET)	
					10	Continues: DARK GRAY AND BLUE GRAY SHEARED SHALE, closely to extremely closely spaced fractures, firm, plastic to friable, fresh to slightly weathered; foliated, with inclusions of moderately hard sandstone fragments, talc patches (Franciscan Complex).
					11	
					12	
					13	
					14	
					15	
					16	Bottom of test pit at 16 feet. No free groundwater seepage observed.

* Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007

RGH Consultants, Inc.

Job No: 2096.02.01.1

Appr: gp

Drwn: tl

Date: April 2008

LOG OF TEST PIT TP-3

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 9B

EQUIPMENT: Deere 160C LC Excavator with a 36-inch bucket

LOGGED BY: GDS DATE: 9-27-06

EXCAVATOR: Mora Construction ELEVATION: 1922.00 *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Sample	DEPTH (FEET)	
					0	BROWN SANDY CLAY (CL), medium stiff, dry; porous with small sandstone rock fragments and abundant roots (Topsoil).
					1	
					2	DARK GRAY SHEARED SHALE, closely to extremely closely spaced fractures, firm to moderately hard, plastic to friable, fresh to slightly weathered; foliated, with inclusions of moderately strong sandstone fragments, talc stringers (Franciscan Complex).
					3	
					4	
					5	
					6	
					7	
					8	
					9	

* Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007

RGH Consultants, Inc.

Job No: 2096.02.01.1

Appr: gjo

Drwn: tl

Date: April 2008

LOG OF TEST PIT TP-4

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 10A

EQUIPMENT: Deere 160C LC Excavator with a 36-inch bucket

LOGGED BY: GDS DATE: 9-27-06

EXCAVATOR: Mora Construction ELEVATION: 1922.00 *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Sample	DEPTH (FEET)
					10
					11
					12
					13
					14
					15
					16
					17
					18

Continues: DARK GRAY SHEARED SHALE, closely to extremely closely spaced fractures, firm to moderately hard, plastic to friable, fresh to slightly weathered; foliated, with inclusions of moderately strong sandstone fragments, talc stringers (Franciscan Complex).

Discontinuous, undulating, planar feature at 14 feet: N14W / 24NE.

Bottom of test pit at 18 feet.
No free groundwater seepage observed.

* Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007

RGH Consultants, Inc.

Job No: 2096.02.01.1
Appr: gp
Drwn: tl
Date: April 2008

LOG OF TEST PIT TP-4
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 10B

EQUIPMENT: Deere 160C LC Excavator with a 36-inch bucket

LOGGED BY: GDS DATE: 9-27-06

EXCAVATOR: Mora Construction ELEVATION: 1904.00 *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Sample	DEPTH (FEET)	
					0	BROWN CLAYEY SAND (SC), medium dense, dry; porous with roots and sandstone fragments (Topsoil).
					1	DARK BLUE GRAY SANDSTONE, closely to extremely closely spaced fractures, firm, friable to weak, slightly to moderately weathered (Franciscan Complex).
					2	
					3	DARK GRAY SHEARED SHALE, closely to extremely closely spaced fractures, firm, plastic to friable, fresh to slightly weathered; foliated, talc stringers (Franciscan Complex).
					4	
					5	
					6	
					7	

Bottom of test pit at 7½ feet.
No free groundwater seepage encountered.

* Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007

RGH Consultants, Inc.

Job No: 2096.02.01.1
Appr: gp
Drwn: tl
Date: April 2008

LOG OF TEST PIT TP-5
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 11

EQUIPMENT: Track Mounted Mud Rotary Drill Rig
DRILLER: Pitcher Drilling
LOGGED BY: GDS, BNP
START DATE: 11-15-06
ELEVATION: 1865 feet**
FINISH DATE: 11-15-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot	Sample	DEPTH (FEET)	
					0	BROWN SANDY CLAY, medium stiff, moist; porous (Colluvium).
			24*		2	BROWN GRAVELLY CLAY, very stiff, moist (Residual Soil).
					3	BROWN SANDSTONE, closely spaced fractures, moderately hard, weak to moderately strong, slightly weathered (Franciscan Complex).
	1	60/29	1		4	
					5	
					6	gradual color change to mottled gray brown.
		100/80	2		7	
					8	
		80/69	3		9	
					10	gradual color change to mottled gray.
					11	
		40/0	4		12	
					13	
			39*		14	
					15	
		15/0	5		16	DARK GRAY SHEARED SHALE, firm, plastic to friable, fresh to slightly weathered; with inclusions of hard graywacke sandstone fragments (Franciscan Complex).
					17	
		20/0	6		18	
					19	
	2	100/83	7		20	
					21	
		100/83	8		22	
					23	
			42*		24	

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

RGH Consultants, Inc.

Job No: 2096.02.01.1
Appr: gz
Drwn: tl
Date: April 2008

LOG OF CORE BORING 1
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 12A

DRILLER: Pitcher Drilling

LOGGED BY: GDS, BNP START DATE: 11-15-06

ELEVATION: 1865 feet** FINISH DATE: 11-15-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
	2	100/100	9		25	Quartz veining in sandstone inclusion at 25.0 feet.
					26	
		100/75	10		27	
					28	DARK GRAY GRAYWACKE SANDSTONE, very closely spaced fractures, moderately hard, weak to moderately strong, slightly weathered (Franciscan Complex). Shears between 70° - 75° at 29.0 feet.
		100/83	11		29	
					30	Bottom of core boring at 30 feet.

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

RGH Consultants, Inc.

Job No: 2096.02.01.1
Appr: go
Drwn: tl
Date: April 2008

LOG OF CORE BORING 1
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 12B

EQUIPMENT: Track Mounted Mud Rotary Drill Rig

DRILLER: Pitcher Drilling

LOGGED BY: BNP START DATE: 11-16-06

ELEVATION: 1935 feet** FINISH DATE: 11-16-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
					0	BROWN SANDY CLAY, medium stiff, wet (Topsoil).
			14*		2	
	1	80/60	1		3	LIGHT BROWN SANDSTONE, firm, friable to weak, slightly to moderately weathered; with shale fragments (Franciscan Complex).
					6	
		75/67	2		7	DARK GRAY SHEARED SHALE, extremely closely spaced fractures, firm, plastic to friable, fresh to slightly weathered (Franciscan Complex).
		100/100	3		8	
		100/85	4		10	
		100/100	5		12	Quartz veining and mineralization along fractures beginning at 11½ feet.
			55*		13	very closely to extremely closely spaced fractures
	2	100/78	6		15	
		100/0	7		16	Lenses of shale, drilling resistance increases.
		100/83	8		17	
		100/100	9		18	
		80/83	10		19	
					20	
		80/80	11		21	
					22	
			31*		23	
	3	67/100	12		24	

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

R G H Consultants, Inc.

Job No: 2096.02.01.1

Appr: gf

Drwn: tl

Date: April 2008

LOG OF CORE BORING 2

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 13A

DRILLER: Pitcher Drilling

LOGGED BY: BNP START DATE: 11-16-06

ELEVATION: 1935 feet** FINISH DATE: 11-16-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
	3	100/100	13		25–26	With saccharoidal texture, light greenish gray mineralization
		90/80	14		27–28	
		93/80	15		29–30	
		100/100	16		31	
	4	100/88	17		32–33	
		74/72	18		34	
		64/72	19		35–36	
			75+*		37–38	
		100/100	20		39–40	DARK GRAY GRAYWACKE SANDSTONE, extremely closely spaced fractures, hard, strong, slightly weathered (Franciscan Complex). Spot core below 40 feet.
					41–46	
		85/82	21		47–48	Bottom of core boring at 48½ feet.

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

RGH Consultants, Inc.

Job No: 2096.02.01.1
Appr: gjo
Drwn: tl
Date: April 2008

LOG OF CORE BORING 2

Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 13B

DRILLER: Pitcher Drilling

LOGGED BY: GDS, BNP START DATE: 11-16-06

ELEVATION: 1931 feet** FINISH DATE: 11-16-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
					0	BROWN SANDY / GRAVELLY CLAY (CL), medium stiff, moist (Topsoil).
			12*		2	MOTTLED ORANGE BROWN SANDY CLAY (CL), stiff, moist (Residual Soil).
			17*		4	
	1	100/31	1		6	
		100/67	2		8	DARK GRAY SHEARED SHALE, extremely closely spaced fractures, firm, plastic to friable, fresh to slightly weathered (Franciscan Complex).
		80/33	3		9	
		80/44	4		10	Quartz mineralization on fracture surfaces
		80/73	5		11	
	2	90/63	6		12	
					14	less plastic at 14 feet.
			49*		15	
		50/0	7		16	Graywacke sandstone fragments from 16 to 18 feet.
		80/0	8		18	With quartz veining.
		87/43	9		19	
		75/33	10		21	
			50+*		22	
	3	67/90	11		23	
		100/70	12		24	Quartz veining and greenish gray mineralization at 25 feet, contains graywacke sandstone fragments

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

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Appr: gp

Drwn: tl

Date: April 2008

LOG OF CORE BORING 3

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 14A

EQUIPMENT: Track Mounted Mud Rotary Drill Rig
DRILLER: Pitcher Drilling
LOGGED BY: GDS, BNP START DATE: 11-16-06
ELEVATION: 1931 feet** FINISH DATE: 11-16-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot "	Sample	DEPTH (FEET)
	3	95/100	13		25
					26
		100/100	14		27
					28
		50/80	15		29
					30
		100/100	16		31
	4	85/0	17		32
					33
		100/0	18		
		100/0	19		34
		100/0	20		
			50+*		35

DARK GRAY GRAYWACKE SANDSTONE, extremely to very closely spaced fractures, moderately strong, moderately hard, slightly weathered; with quartz veining (Franciscan Complex).

Bottom of core boring at 35½ feet.

** Modified from "Partial Site Plan, Sheet A1.2", by Becken Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

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Date: April 2008

LOG OF CORE BORING 3
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 14B

EQUIPMENT: Track Mounted Mud Rotary Drill Rig

DRILLER: Pitcher Drilling

LOGGED BY: BNP START DATE: 11-17-06

ELEVATION: 1890 feet** FINISH DATE: 11-17-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
					0	BROWN SANDY CLAY (CL), medium stiff, moist; porous, with gravel (Colluvium).
			28*		2	LIGHT BROWN SANDSTONE, firm, friable, slightly to moderately weathered (Franciscan Complex).
	1	80/30	1		4	
		100/30	2		5	MOTTLED ORANGE BROWN SANDSTONE, extremely to very closely spaced fractures, moderately hard, moderately strong, slightly weathered (Franciscan Complex).
		100/100	3		7	
		100/100	4		8	
		100/80	5		9	
		100/100	6		11	
					12	Sheared shale lens at 12 feet.
	2	100/0	7		13	
			70*		14	quartz veining on fracture surfaces
		100/95	8		15	
					16	DARK GRAY GRAYWACKE SANDSTONE, very closely spaced fractures, moderately hard, moderately strong, slightly weathered; with quartz veining (Franciscan Complex).
		100/85	9		17	
		100/95	10		19	DARK GRAY SHEARED SHALE, extremely closely spaced fractures, firm, plastic to friable, fresh to slightly weathered (Franciscan Complex).
	3	70/80	11		21	
					22	with graywacke sandstone fragments
		100/100	12		23	

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

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Drwn: tl

Date: April 2008

LOG OF CORE BORING 4

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 15A

EQUIPMENT: Track Mounted Mud Rotary Drill Rig
DRILLER: Pitcher Drilling
LOGGED BY: BNP START DATE: 11-17-06
ELEVATION: 1890 feet** FINISH DATE: 11-17-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
	3	0/0	13		25	No recovery at 25 to 26 feet. Very hard drilling below 25 feet.
		0/0	14			
		100/0	15		26	
		100/50	16		27	
		80/50	17		28	
					29	
			67*		30	

Bottom of core boring at 30½ feet.

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

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Job No: 2096.02.01.1
Appr: go
Drwn: tl
Date: April 2008

E-96

LOG OF CORE BORING 4
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 15B

Equipment: Track-Mounted Rotary Drill Rig

DRILLER: Pitcher Drilling

LOGGED BY: BNP START DATE: 11-17-06

ELEVATION: 1887 feet** FINISH DATE: 11-18-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
					0	BROWN SANDY CLAY (CL), medium stiff, moist; porous, with gravel (Colluvium).
			22*		2	
					3	LIGHT BROWN SANDSTONE, weak, moderately strong, slightly to moderately weathered (Franciscan Complex).
	1	100/90	1		4	MOTTLED GRAY SHEARED SHALE, firm, plastic to friable, fresh to slightly weathered (Franciscan Complex).
		100/90	2		6	Lenses of sandstone, closely spaced fractures, hard, strong.
		100/100	3		7	
		100/85	4		10	
	2	100/85	5		12	
			50+*		13	DARK GRAY GRAYWACKE SANDSTONE, closely to extremely closely spaced fractures, hard, moderately strong, slightly weathered (Franciscan Complex).
					14	Spot core from below 14½ feet to 25 feet.
		72/0	6		16	
		72/0	7		17	
		100/80	8		21	
		67/30	9		22	
					23	
					24	DARK GRAY SHEARED SHALE, closely to extremely closely spaced fractures, firm, plastic to friable, fresh to

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

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Appr: gp

Drwn: tl

Date: April 2008

LOG OF CORE BORING 5

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 16A

DRILLER: Pitcher Drilling
LOGGED BY: BNP — START DATE: 11-17-06
ELEVATION: 1887 feet** — FINISH DATE: 11-18-06

Remarks	Box #	% Rec / % Rqd	Sample # / Blows per foot *	Sample	DEPTH (FEET)	
	3	100/80	10		25	slighly weathered (Franciscan Complex).
					26	
					27	
		40/0	11		28	
					29	
					30	Bottom of core boring at 30 feet.

** Modified from "Partial Site Plan, Sheet A1.2", by Backen Gillam Architects, dated 09-04-07. Previously excavated for proposed winery on "Site Plan", prepared by Atterbury & Associates, dated January 25, 2007.

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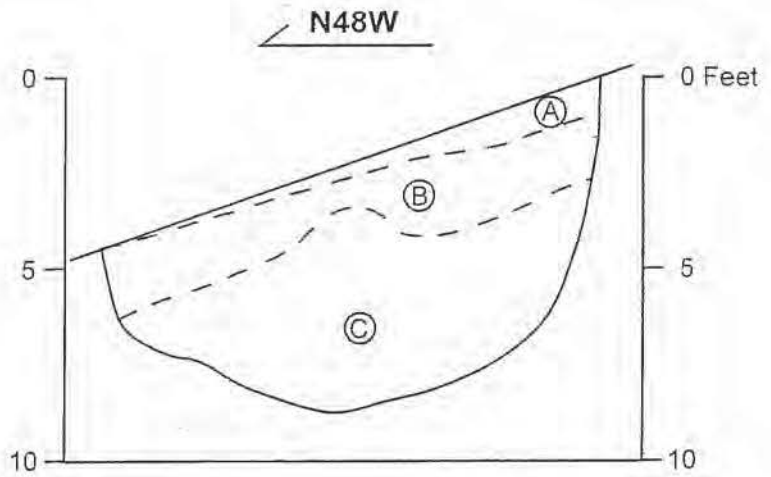
Job No: 2096.02.01.1
Appr: gs
Drwn: tl
Date: April 2008

LOG OF CORE BORING 5
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 16B



Ⓐ DARK BROWN CLAYEY SAND (SC), loose, moist; porous, with rock fragments (Colluvium).

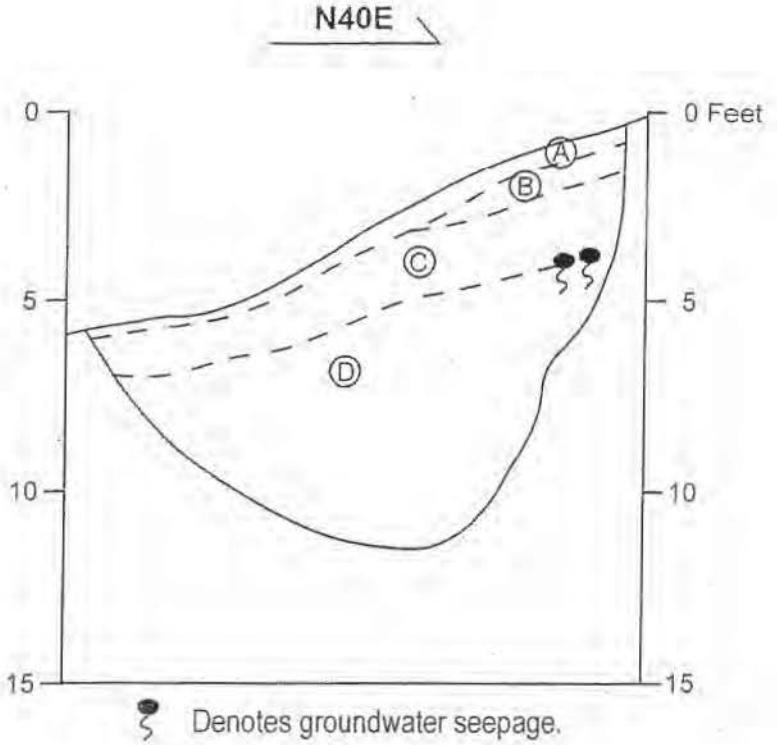
Ⓑ REDDISH BROWN AND LIGHT GRAY SANDY CLAY (CL), stiff, moist; with sandstone rock fragments (Residual Soil).

Ⓒ GRAY BROWN SANDSTONE, closely to extremely closely spaced fractures, moderately hard, weak to moderately strong, moderately weathered; with yellow and orange mottling, black staining on fracture surfaces. Fractures: N32E/8SE; N21W/25SW (Franciscan Complex)

No free groundwater seepage observed

Elevation: 1897 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: gp Drwn: tl Date: Apr 2008	**LOG OF TEST PIT TP-6** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE **17**



Ⓐ DARK BROWN SANDY CLAY (CL), soft moist; porous, with rock fragments and grass roots (Colluvium, disturbed by grubbing).

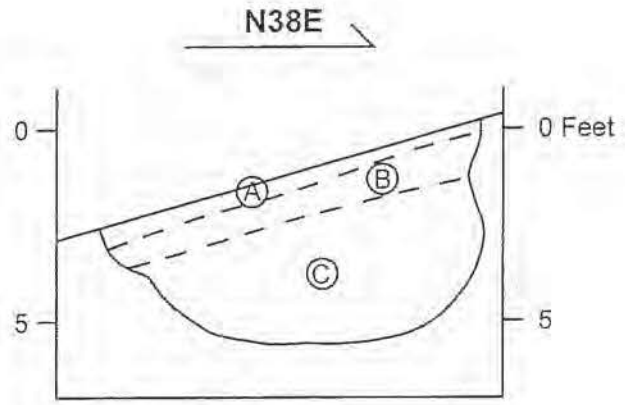
Ⓑ MOTTLED BROWN SANDY CLAY (CL), medium stiff, moist; porous, with small sandstone fragments and small roots (Colluvium).

Ⓒ DARK GRAY SANDY CLAY (CH), medium stiff, wet; with small roots, grading mottled yellow brown and moist to southwest, shearing at 30" on northeast (Active Landslide Debris).

Ⓓ BROWN SANDSTONE, closely to extremely closely spaced fractures, moderately hard to hard, weak to moderately strong, moderately weathered; with yellow and orange mottling, dark brown and black staining on fracture surfaces, dark gray clayey bands that are firm and friable to plastic (Franciscan Complex)

Elevation: 1913 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: go Drwn: tl Date: Apr 2008 E-100	**LOG OF TEST PIT TP-7** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 18



Ⓐ MOTTLED YELLOW BROWN CLAYEY GRAVEL (GC), loose, moist; porous, with sandstone rock fragments and grass roots (Colluvium, disturbed by grubbing).

Ⓑ MOTTLED YELLOW AND ORANGE BROWN SANDY CLAYEY GRAVEL (GC), medium dense, moist; with plastic clayey pockets (Colluvium).

Ⓒ GRAY BROWN SANDSTONE, closely to extremely closely spaced fractures, moderately hard to hard, weak to moderately strong, moderately weathered; with light gray veining, firm and friable pockets in upper portion, dark brown and black staining on fracture surfaces (Franciscan Complex).

No free groundwater seepage observed.

Elevation: 1885 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: go Drwn: tl Date: Apr 2008	**LOG OF TEST PIT TP-8** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 19

Ⓐ GRAY BROWN SANDY CLAY (CL), soft to medium stiff, moist; with roots in upper foot (Topsoil).

Ⓑ MOTTLED GRAY AND BROWN GRAVELLY CLAY (CL-CH), stiff, moist; free water seepage observed on southeast, lower contact marked by roots and root mats, shears inclined 20-24° northwesterly (Colluvium).

Ⓒ DARK GRAY AND BROWN SHEARED SHATTERED SHALE LANDSLIDE DEBRIS, closely to very closely spaced fractures, moderately hard, weak to moderately strong, moderately weathered; foliated, with zones of firm, plastic clay and local hard rock, local talc patches and stringers, minor clay infilling, local yellow brown mottling, root mats, shear plane N30E/55NW (Ancient Landslide Debris).

Elevation: 1868 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

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Job No: 2096.02.01.1
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Date: Apr 2008

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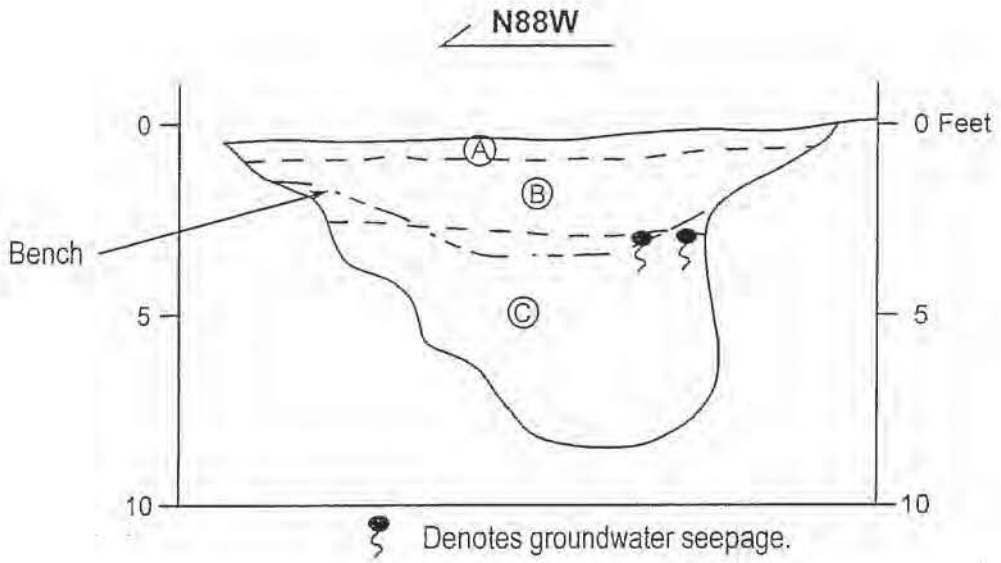
LOG OF TEST PIT TP-9
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 20



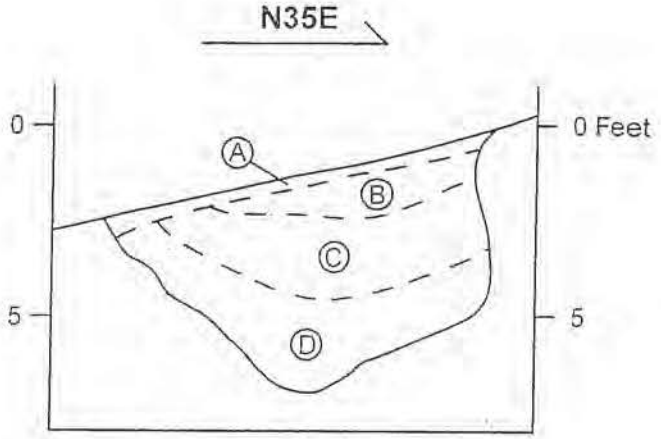
Ⓐ DARK BROWN SANDY CLAY (CL), soft moist; porous, with rock fragments and grass roots (Topsoil).

Ⓑ MOTTLED YELLOW BROWN SANDY CLAY (CL), stiff, moist; with sandstone rock fragments, light gray patches, grading plastic with increasing depth to base of horizon, free water seepage at base of horizon on southeast (Colluvium).

Ⓒ MOTTLED YELLOW BROWN SHATTERED SANDSTONE LANDSLIDE DEBRIS, very closely to extremely closely spaced fractures, firm to moderately hard, friable to weak, moderately weathered; with dark gray and light gray patches (Ancient Landslide Debris).

Elevation: 1863 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: go Drwn: tl Date: Apr 2008	**LOG OF TEST PIT TP-10** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 21



Ⓐ MOTTLED BROWN SANDY CLAY (CL), soft, moist; with mixed organics (Topsoil, disturbed by grubbing).

Ⓑ MOTTLED YELLOW AND ORANGE BROWN SANDY CLAY (CH), medium stiff, wet; with rock fragments and roots (Active Landslide Debris)

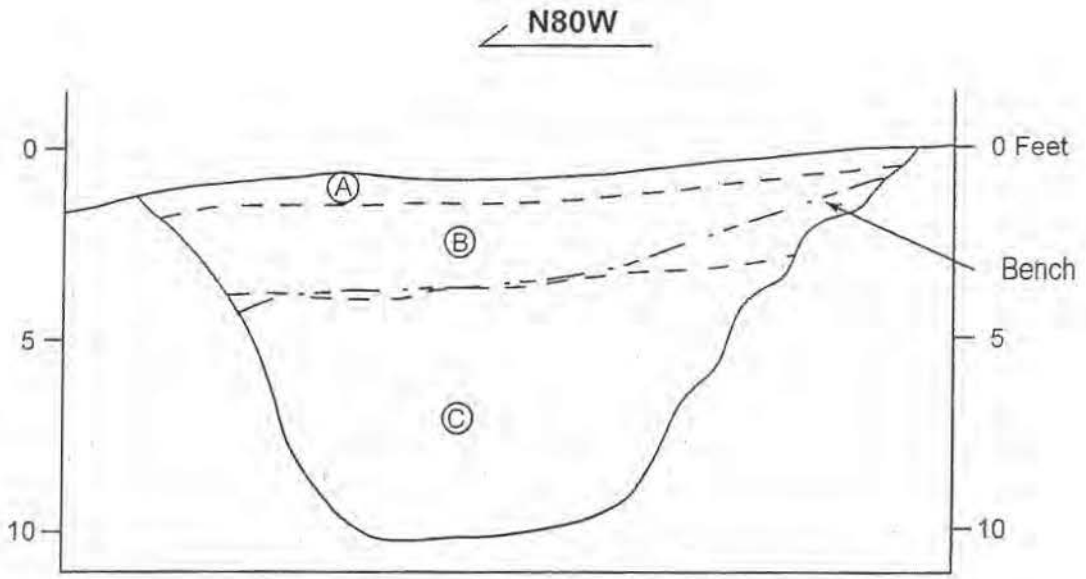
Ⓒ MOTTLED DARK GRAY AND BROWN CLAYEY GRAVEL (GC), medium dense, moist; with local roots (Active Landslide Debris).

Ⓓ DARK GRAY SHEARED SHATTERED SHALE LANDSLIDE DEBRIS, closely to very closely spaced fractures, moderately hard, weak to moderately strong, moderately weathered; foliated, with firm and friable pockets (Ancient Landslide Debris).

No free groundwater seepage observed.

Elevation: 1864 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: gs Drwn: tl Date: Apr 2008	LOG OF TEST PIT TP-11 Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 22



Ⓐ BROWN SANDY CLAY (CL), soft, moist; porous, with abundant roots (Topsoil).

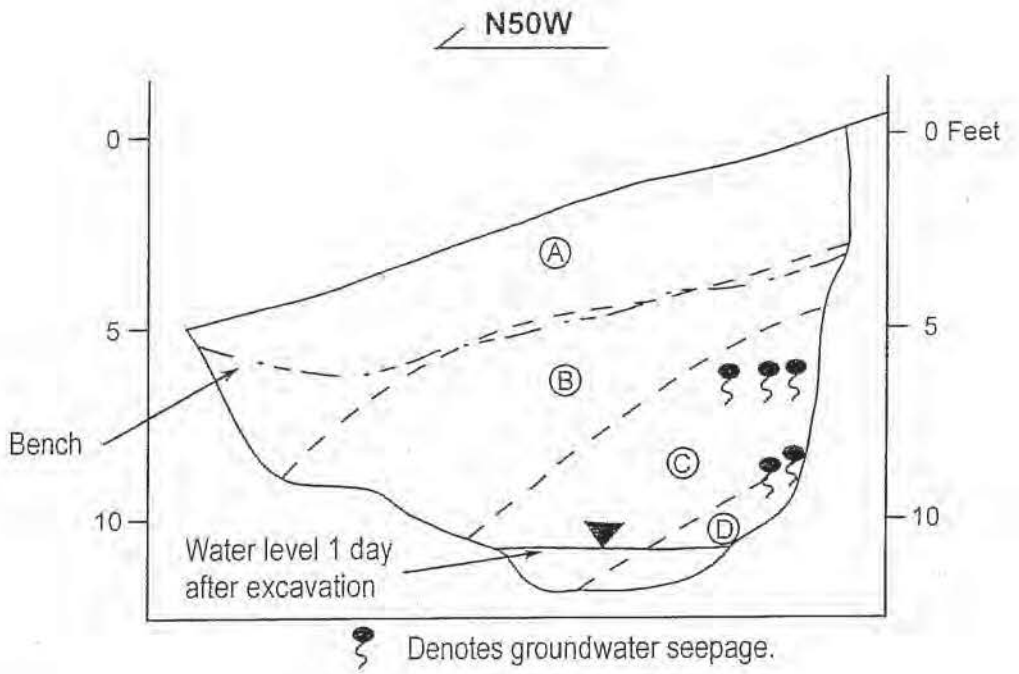
Ⓑ YELLOW BROWN SANDY CLAY (CL-CH), stiff, moist; with sandstone rock fragments and roots (Colluvium).

Ⓒ MOTTLED YELLOW BROWN SHEARED SHATTERED SHALE LANDSLIDE DEBRIS, extremely closely spaced fractures, moderately hard, moderately strong, moderately weathered; foliated, with clayey pockets and root filled veins (Ancient Landslide Debris).

No free groundwater seepage observed.

Elevation: 1851 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: gp Drwn: tl Date: Apr 2008	**LOG OF TEST PIT TP-12** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE **23**



Ⓐ DARK BROWN SANDY CLAY (CL), medium stiff, moist; porous with abundant roots (Colluvium).

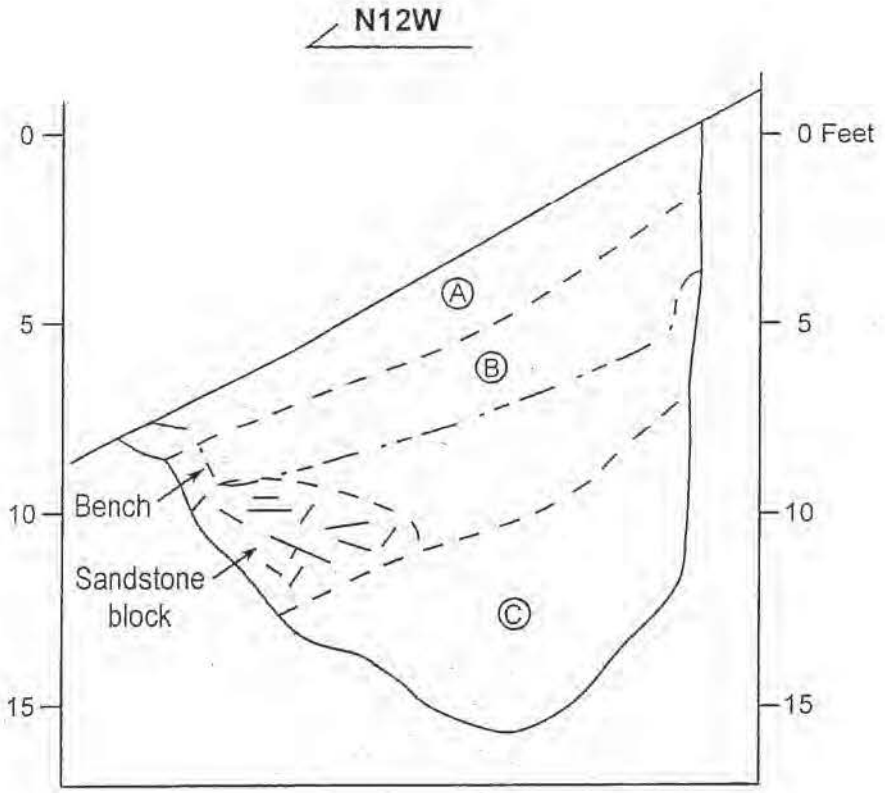
Ⓑ MOTTLED GRAY AND YELLOW BROWN SANDY CLAY (CH), medium stiff, wet; with sandstone rock fragments, shear plane N56W/50NW at base of horizon (Colluvium).

Ⓒ DARK GRAY SHEARED SHALE LANDSLIDE DEBRIS, extremely closely spaced fractures, firm to weak, friable, moderately weathered; with moderately hard blocks of graywacke sandstone, local talc stringers, free water seepage observed throughout (Dormant Landslide Debris).

Ⓓ MOTTLED GRAY AND YELLOW BROWN SHEARED SHALE, closely to extremely closely spaced fractures, hard, strong, slightly weathered (Franciscan Complex).

Elevation: 1836 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: go Drwn: tl Date: Apr 2008	**LOG OF TEST PIT TP-13** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 24



Ⓐ MOTTLED BROWN SANDY CLAY (CL), medium stiff, moist; porous, with sandstone rock fragments and roots (Colluvium).

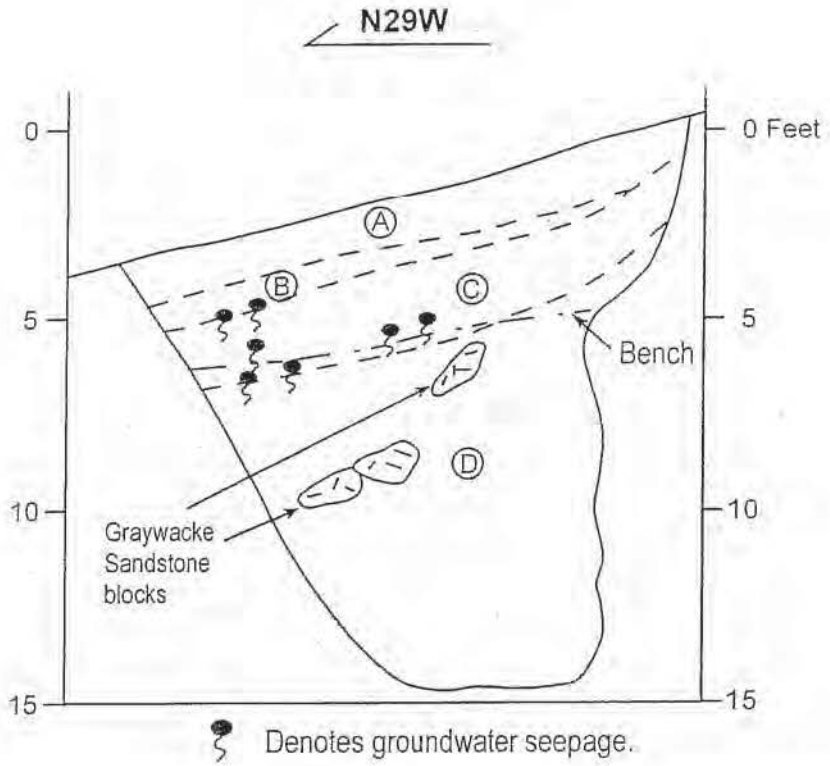
Ⓑ MOTTLED YELLOW BROWN AND DARK GRAY GRAVELLY CLAY (CL-CH), stiff, moist; with cobble and boulder sized sandstone fragments, tree roots, shear plane N75E/26NW @ 3½ feet on opposite pit wall (Colluvium).

Ⓒ DARK GRAY TO BLACK SHEARED SHATTERED SHALE LANDSLIDE DEBRIS, very closely to extremely closely spaced fractures, firm to moderately hard, friable to weak, moderately weathered; foliated, with local shattered sandstone blocks and talc streaks, root mats (Dormant Landslide Debris).

No free groundwater seepage observed.

Elevation: 1870 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: gp Drwn: tl Date: Apr 2008	**LOG OF TEST PIT TP-14** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE **25**



Ⓐ BROWN SANDY CLAY (CL), medium stiff, moist; porous, with rock fragments and abundant roots (Colluvium).

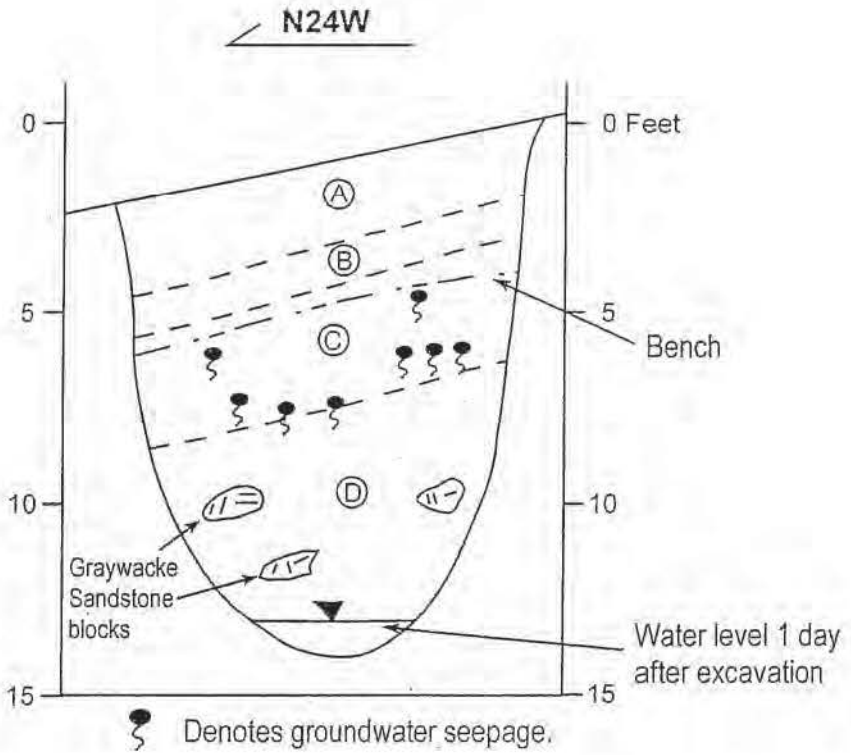
Ⓑ MOTTLED BROWN-GRAY BROWN GRAVELLY CLAY (CH), medium stiff, moist (Colluvium).

Ⓒ MOTTLED YELLOW BROWN AND GRAY GRAVELLY CLAY (CH), medium stiff, wet; roots along base of horizon, free water seepage throughout (Colluvium).

Ⓓ DARK GRAY SHEARED SHATTERED SHALE LANDSLIDE DEBRIS, very closely to extremely closely spaced fractures, firm to moderately hard, plastic to weak, moderately weathered; foliated, with local talc stringers and root mats (Dormant Landslide Debris).

Elevation: 1884 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: go Drwn: tl Date: Apr 2008	LOG OF TEST PIT TP-15 Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 26



Ⓐ BROWN SANDY CLAY (CL), medium stiff, moist; porous, with rock fragments and roots (Colluvium).

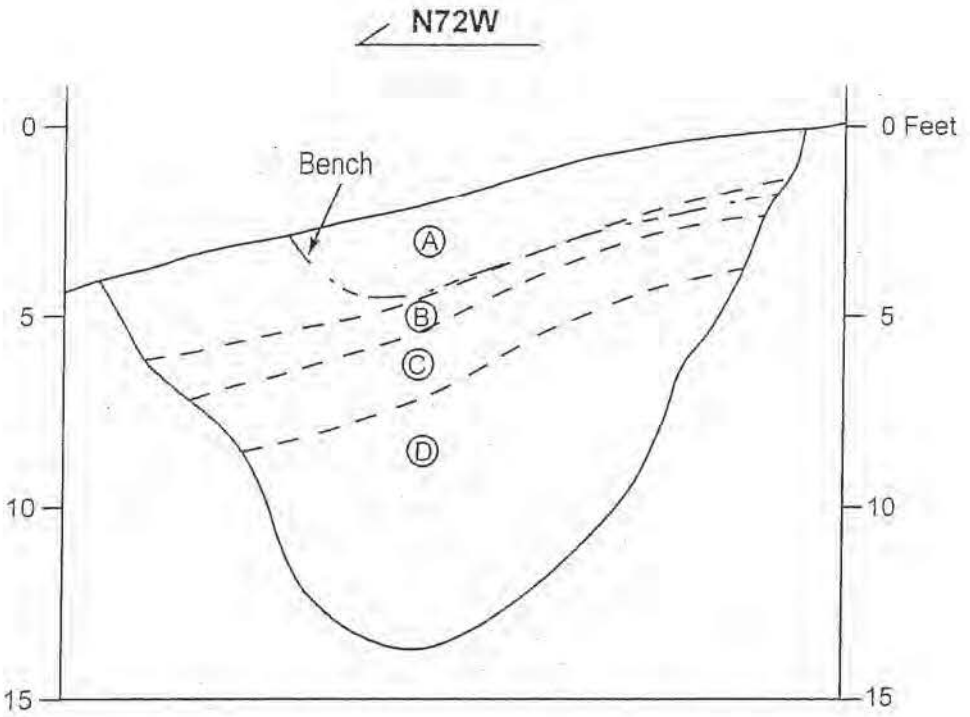
Ⓑ MOTTLED BROWN GRAVELLY CLAY (CL-CH), medium stiff, moist; with some roots (Colluvium).

Ⓒ MOTTLED YELLOW BROWN AND GRAY GRAVELLY CLAY (CH), stiff, wet; with sandstone rock fragments and local roots, free water seepage throughout, shear plane N18W/20SW; N35W/18SW (Colluvium).

Ⓓ DARK GRAY SHEARED SHATTERED SHALE LANDSLIDE DEBRIS, very closely to extremely closely spaced fractures, firm, plastic, moderately weathered; foliated, with moderately hard inclusions, abundant talc patches and root mats, pinched clay seams (Dormant Landslide Debris).

Elevation: 1918 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

RGH Consultants, Inc.	Job No: 2096.02.01.1 Appr: gp Drwn: tl Date: Apr 2008	**LOG OF TEST PIT TP-16** Cornell Winery 245 Wappo Road Santa Rosa, California	PLATE 27



Ⓐ DARK BROWN SANDY CLAY (CL), medium stiff, moist; porous, with rock fragments and roots (Colluvium).

Ⓑ BROWN GRAVELLY CLAY (CL), stiff, moist; with some roots (Colluvium).

Ⓒ MOTTLED YELLOW BROWN AND GRAY GRAVELLY CLAY (CH), stiff, moist (Colluvium).

Ⓓ DARK GRAY SHEARED SHALE, closely to extremely closely spaced fractures, firm, friable, moderately weathered; foliated, with moderately hard to hard and friable to weak inclusions, talc seams (Franciscan Complex).

No free groundwater seepage observed.

Elevation: 1936 feet, from "Partial Site Plan, Sheet A1.2" by Backen Gillam Architects, dated 9/4/07. Scale: 1" = 5'

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UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL (LITTLE OR FINES)		GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVEL, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVEL WITH FINES (OVER 12% OF FINES)		GM	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GC	CLAYEY GRAVEL, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SAND, GRAVELLY SAND, LITTLE OR NO FINES
				SP	POORLY-GRADED SAND, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (OVER 12% OF FINES)		SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
				SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANICS SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	ORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS AND OTHER SOILS WITH HIGH ORGANIC-CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

KEY TO TEST DATA

Consol - Consolidation
LL - Liquid Limit (in%)
PL - Plastic Limit (in%)
Gs - Specific Gravity
SA - Sieve Analysis
▯ - Pitcher Barrel Sample
☒ - Bulk or Disturbed Sample
◥ - Standard Penetration Test
▥ - Sample Attempt With No Recovery

Shear Strength, psf		Confining Pressure, psf	
Tx	320	(2600)	- Unconsolidated Undrained Traixial
TxCU	320	(2600)	- Consolidated Undrained Triaxial
DS	2750	(2600)	- Consolidated Drained Direct Shear
UC	2000		- Unconfined Compression
FVS	470		- Field Vane Shear
LVS	700		- Laboratory Vane Shear
SS			- Shrink Swell
EXP			- Expansion
P			- Permeability

Note: All strength tests on 2.8-in. or 2.4-in. diameter sample, unless otherwise indicated.

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SOIL CLASSIFICATION CHART AND KEY TO TEST DATA
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 29

ROCK SYMBOLS

 SHALE OR CLAYSTONE

 SILTSTONE

 SANDSTONE

 CONGLOMERATE

 CHERT

 PYROCLASTIC

 VOLCANIC

 PLUTONIC

 SERPENTINITE

 METAMORPHIC ROCKS

 ALTERED ROCKS

 SHEARED ROCKS

LAYERING

MASSIVE	Greater than 6 feet
THICKLY BEDDED	2 to 6 feet
MEDIUM BEDDED	8 to 24 inches
THINLY BEDDED	2½ to 8 inches
VERY THINLY BEDDED	¾ to 2½ inches
CLOSELY LAMINATED	¼ to ¾ inches
VERY CLOSELY LAMINATED	Less than ¼ inch

JOINT, FRACTURE, OR SHEAR SPACING

VERY WIDELY SPACED	Greater than 6 feet
WIDELY SPACED	2 to 6 feet
MODERATELY SPACED	8 to 24 inches
CLOSELY SPACED	2½ to 8 inches
VERY CLOSELY SPACED	¾ to 2½ inches
EXTREMELY CLOSELY SPACED	Less than ¾ inch

HARDNESS

Soft - pliable; can be dug by hand

Firm - can be gouged deeply or carved with a pocket knife

Moderately Hard - can be readily scratched by a knife blade; scratch leaves heavy trace of dust and is readily visible after the powder has been blown away

Hard - can be scratched with difficulty; scratch produces little powder and is often faintly visible

Very Hard - cannot be scratched with pocket knife, leaves a metallic streak

STRENGTH

Plastic - capable of being molded by hand

Friable - crumbles by rubbing with fingers

Weak - an unfractured specimen of such material will crumble under light hammer blows

Moderately Strong - specimen will withstand a few heavy hammer blows before breaking

Strong - specimen will withstand a few heavy ringing hammer blows and usually yields large fragments

Very Strong - rock will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

DEGREE OF WEATHERING

Highly Weathered - abundant fractures coated with oxides, carbonates, sulphates, mud, etc., thorough discoloration, rock disintegration, mineral decomposition

Moderately Weathered - some fracture coating, moderate or localized discoloration, little to no effect on cementation, slight mineral decomposition

Slightly Weathered - a few stained fractures, slight discoloration, little or no effect on cementation, no mineral composition

Fresh - unaffected by weathering agents; no appreciable change with depth

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ENGINEERING GEOLOGY ROCK TERMS
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 30

APPENDIX B - REFERENCES

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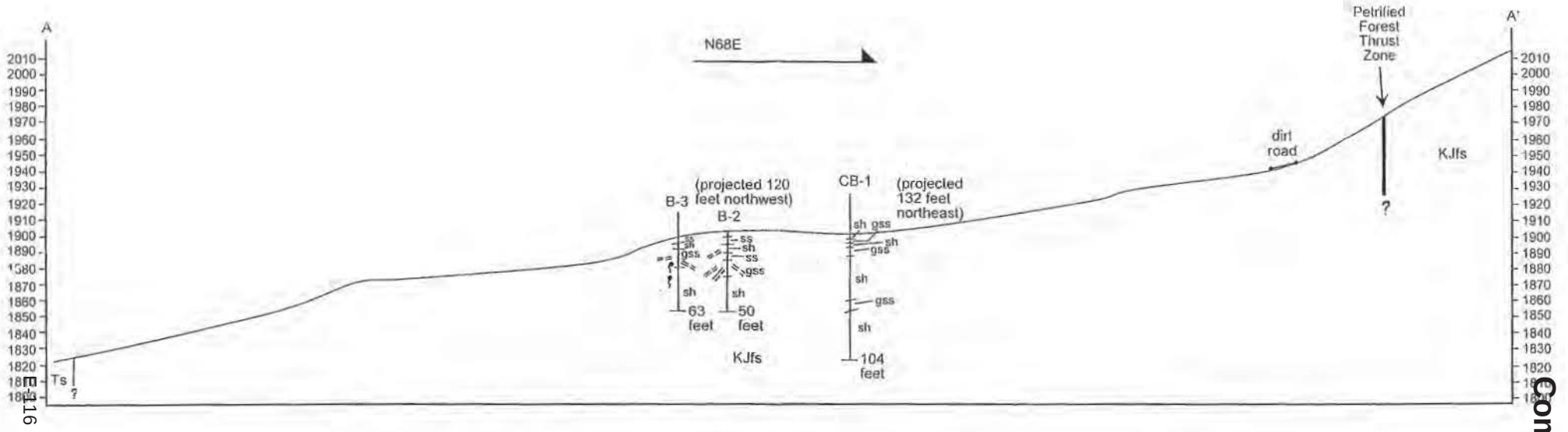
APPENDIX C - PLATES

LIST OF SELECTED PREVIOUS PLATES

Plate 5	Generalized Geologic Cross Section
Plates 6 through 8	Borings Logs



LEGEND:			
CB	Core Boring Location	KJfs	Jurassic-Cretaceous-age Franciscan Complex
B	Boring Location and Number	sh	Sheared shale
?	Vertical bedding contact shown; dip of contact not found during mapping	gss	Graywacke sandstone
?	Vertical fault contact shown; dip of contacts not found during mapping	ss	Sandstone
==	Fracture dip orientation; adjusted to show apparent dip angle	ss / gss / sh	Contacts between units observed in borings
Ts	Tertiary-age Sonoma Volcanics	? ?	Zone of seepage

Cross section based on topographic map prepared by HWB, dated October 2005 (see Plate 2).

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Date: JUN 2006

GENERALIZED GEOLOGIC CROSS SECTION A-A'
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE

EQUIPMENT: [illegible] Drill Rig

LOGGED BY: GS, BP, BDM | START DATE: 11-8-05

DRILLER: Westex | FINISH DATE: 11-14-06

ELEVATION: 1926 feet**

Remarks	Box #	% Rec/% Rqd	Sample #/Run #	Sample	DEPTH (FEET)	Description
					0–2	REDDISH BROWN SANDY CLAY (CL), soft, wet; porous (Colluvium).
* blows per foot			22* (at 3); 23* (at 5); 18* (at 8)	■	2–15	LIGHT GRAY AND DARK GRAY SHEARED SHALE, extremely closely spaced fractures, firm, plastic to friable, fresh to slightly weathered; foliated, predominantly matrix supported (Franciscan Complex).
			50+*	■	15–19	DARK GRAY GRAYWACKE SANDSTONE, extremely closely spaced fractures, moderately hard, moderately strong, fresh to slightly weathered, rock supported (Franciscan Complex).
				■	19–28	DARK GRAY SHEARED SHALE, firm, plastic to friable, fresh to slightly weathered, with inclusions of hard graywacke sandstone fragments, matrix supported (Franciscan Complex).
** Topographic Survey by Howard W. Brunner, dated October 2005.		57%		■	28–29+	DARK GRAY GRAYWACKE SANDSTONE, extremely closely spaced fractures, moderately hard, moderately strong, slightly weathered, rock supported (Franciscan

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Drwn: jj

Date: Apr 2006

LOG OF CORE BORING 1

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 6A

COMPANY: Truck Mounted Auger And Rotary Drill Rig
LOGGED BY: GS, BP, BDM
START DATE: 11-8-05
DRILLER: Westex
FINISH DATE: 11-14-06
ELEVATION: 1926 feet**

Remarks	Box #	% Rec/% Rqd	Sample #/Run #	Sample	DEPTH (FEET)	
					30	Complex). DARK GRAY SHEARED SHALE, firm, plastic to friable, fresh to slightly weathered, with inclusions of hard graywacke sandstone fragments, matrix supported (Franciscan Complex).
					31	
					32	
					33	DARK BLUE GRAY GRAYWACKE SANDSTONE, extremely to very closely spaced fractures, moderately hard, moderately strong to strong, slightly weathered with zone of sheared shale, firm, friable and slightly weathered, predominantly rock supported (Franciscan Complex).
					34	
					35	
			40%		36	
		1'2"			37	
					38	DARK BLUE GRAY SHEARED SHALE, extremely closely spaced fractures, firm, friable, fresh to slightly weathered, with zones of hard, strong graywacke sandstone, matrix supported (Franciscan Complex).
					39	
					40	
					41	
					42	
					43	
					44	
					45	
					46	
		2.2'	73%		47	
					48	
					49	
					50	
					51	
					52	
					53	
					54	
					55	
					56	
	1'8"	1.7'	55%		57	very closely spaced fractures, matrix supported
					58	
					59	

** Topographic Survey by Howard W. Brunner, dated October 2005.

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Job No: 2096.02.04.1
Appr: gp
Drwn: jj
Date: Apr 2006

LOG OF CORE BORING 1
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 6B

EQUIPMENT: Truck Mounted Rotary Drill Rig

LOGGED BY: GS, BP, BDM

DRILLER: Westex

ELEVATION: 1926 feet**

START DATE: 11-8-05

FINISH DATE: 11-14-06

Remarks	Box #	% Rec/% Rqd	Sample #/Run #	Sample	DEPTH (FEET)	Description
					60–65	
		2.2'	73%	66–68.5	65–72	DARK BLUE GRAY GRAYWACKE SANDSTONE, very closely to closely spaced fractures, moderately hard, weak to moderately strong, slightly weathered, with quartz veining, rock supported (Franciscan Complex).
		1.9'	63%	76–78	72–89	DARK BLUE GRAY SHEARED SHALE, extremely closely spaced fractures, firm, friable, fresh to slightly weathered, with quartz veining and lenses and zones of black clay, matrix supported (Franciscan Complex).
		2.0'	67%	86–88		

** Topographic Survey by Howard W. Brunner, dated October 2005.

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Appr: [signature]

Drwn: jj

Date: Apr 2006

LOG OF CORE BORING 1

Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 6C

EQUIPMENT: Truck Mounted Mobile B-61 Rotary Drill Rig

LOGGED BY: GS, BP, BDM START DATE: 11-8-05

DRILLER: Westex FINISH DATE: 11-14-06

ELEVATION: 1926 feet**

Remarks	Box #	% Rec/% Rqd	Sample #/Run #	Sample	DEPTH (FEET)	
					90	DARK BLUE GRAY SHEARED SHALE, extremely closely spaced fractures, firm, friable, fresh to slightly weathered, with quartz veining and lenses and zones of black clay, matrix supported (Franciscan Complex).
					91	
					92	
					93	
					94	
					95	
					96	
					97	
					98	
					99	
					100	
					101	
					102	
					103	
					104	Bottom of Core Boring at 104 feet.

** Topographic Survey by Howard W. Brunner, dated October 2005.

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Appr: gp

Drwn: jj

Date: Apr 2006

LOG OF CORE BORING 1

Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 6D

EQUIPMENT: Calweld 42 Drill Rig: 24-inch Bucket

LOGGED BY: GS DATE: 12-12-05

DRILLER: Tri Valley Drilling ELEVATION: 1901 feet *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Blows/foot	Sample	DEPTH (FEET)	
						0	MOTTLED ORANGE BROWN CLAYEY GRAVEL, dense, moist to wet; porous, with roots up to 1-inch diameter (Colluvium).
						1	
						2	
						3	MOTTLED ORANGE BROWN SANDSTONE, extremely closely spaced fractures, moderately hard, moderately strong, slightly weathered (Franciscan Complex).
						4	
						5	
					X	6	
						7	MOTTLED BLUE GRAY SHEARED SHALE, firm, plastic to friable, fresh to slightly weathered, slightly foliated, with local small roots, matrix supported (Franciscan Complex).
						8	
						9	
						10	with white streaks and local quartz veining
						11	Fracture orientation: N88°W 47°SW
						12	
						13	
						14	BROWN SANDSTONE, extremely to closely spaced fractures, hard, strong, slightly weathered, with clay patches, local quartz veining, rock supported (Franciscan Complex).
						15	
						16	
						17	
						18	DARK BLUE GRAY GRAYWACKE SANDSTONE, extremely to closely spaced fractures, hard, strong, slightly weathered, with clay patches, local quartz veining, rock supported (Franciscan Complex).
						19	

* Topographic Survey by Howard W. Brunner, dated October 2005.

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Date: Apr 2006

LOG OF BORING 2

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 7A

EQUIPMENT: Calweld 42 Drill Rig: 24-inch Bucket

LOGGED BY: GS DATE: 12-12-05

DRILLER: Tri Valley Drilling ELEVATION: 1901 feet *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Blows/foot	Sample	DEPTH (FEET)	
						20	Fracture orientation: N48°E 65°SE
						21	
						22	
						23	
						24	Fracture orientation: N46°W 53°SW, tight, disc-shaped fracture with pockets of friable rock
						25	
						26	
						27	N58°W 41°SW - thin blue extremely fractured rock seam, with local black staining, undulating contact and poorly defined.
						28	
						29	DARK BLUE GRAY SHEARED SHALE, extremely closely spaced fractures, firm to moderately hard, friable to weak, fresh to slightly weathered, with brown and white streaks, with zones of friable rock and quartz veining, matrix-supported (Franciscan Complex).
						30	
						31	
						32	
						33	
						34	
						35	
						36	
						37	
						38	
						39	

* Topographic Survey by Howard W. Brunner, dated October 2005.

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Date: Jun 2006

LOG OF BORING 2
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 7B

EQUIPMENT: Calweld 42 Drill Rig: 24-inch Bucket

LOGGED BY: GS DATE: 12-12-05

DRILLER: Tri Valley Drilling ELEVATION: 1901 feet *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Blows/foot	Sample	DEPTH (FEET)	
						40	local foliated rock fabric, strong quartz veining
						41	
						42	
						43	
						44	
						45	
						46	
						47	
						48	
						49	
						50	Bottom of boring at 50 feet. No free groundwater observed.

* Topographic Survey by Howard W. Brunner, dated October 2005.

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LOG OF BORING 2
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 7C

EQUIPMENT: Calweld 42 Drill Rig: 24-inch Bucket

LOGGED BY: GS DATE: 12-13-05

DRILLER: Tri Valley Drilling ELEVATION: 1914 feet *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Blows/foot	Sample	DEPTH (FEET)	
						0	MOTTLED ORANGE BROWN CLAYEY GRAVEL, porous, dense, moist to wet (Colluvium).
						1	
						2	
						3	
						4	MOTTLED ORANGE BROWN SANDSTONE, very closely spaced fractures, hard, strong, slightly weathered, with black (Mn?) staining on fracture surfaces, minor quartz veining to 15 feet, local small roots, rock supported (Franciscan Complex).
						5	
						6	
						7	
						8	
						9	
						10	with local dark brown clayey seams
						11	
						12	
						13	
						14	
						15	MOTTLED ORANGE BROWN SANDSTONE, very closely to closely spaced fractures, hard, strong, slightly weathered, rock supported (Franciscan Complex).
						16	
						17	
						18	MOTTLED ORANGE BROWN SHEARED SHALE, extremely to closely spaced fractures, firm, friable, fresh to slightly weathered, matrix supported (Franciscan Complex).
						19	small charcoal fragments at 18 feet

* Topographic Survey by Howard W. Brunner, dated October 2005.

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LOG OF BORING 3

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 8A

EQUIPMENT: Calweld 42 Drill Rig: 24-inch Bucket

LOGGED BY: GS DATE: 12-13-05

DRILLER: Tri Valley Drilling ELEVATION: 1914 feet *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Blows/foot	Sample	DEPTH (FEET)	
						20	
						21	
						22	Slight seepage observed at 22 feet.
						23	MOTTLED ORANGE BROWN AND DARK BLUE GRAY GRAYWACKE SANDSTONE, extremely closely spaced fractures, firm, friable, fresh to slightly weathered, with dark brown black oxide staining, rock supported with zones of matrix support (Franciscan Complex). Lenticular brown and gray sandy clay seams at 23 feet, locally 3-5 inches long, ½-inch thick
						24	
						25	
						26	
						27	BLUE GRAY GRAYWACKE SANDSTONE, extremely closely to closely spaced fractures, hard, strong, slightly weathered, with local saccharoidal texture, quartz veining; with zones of firm, friable clayey matrix, predominantly rock supported (Franciscan Complex). Fracture orientation: N75°E 49°NW at 27 feet Locally heavy seepage observed at 29½ feet on southern and eastern sides of boring. Fracture orientation: N23°E 35°SE
						28	
						29	
						30	
						31	
						32	
						33	Heavy seepage observed from 33 to 43 feet.
						34	
						35	MOTTLED BLUE GRAY SHEARED SHALE, firm, plastic to friable, fresh to slightly weathered, contains locally foliated clayey seams and lenses and pockets of shattered graywacke exhibiting extremely closely spaced fractures and saccharoidal texture, predominantly matrix supported (Franciscan Complex).
						36	
						37	
						38	
						39	

* Topographic Survey by Howard W. Brunner, dated October 2005.

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LOG OF BORING 3
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 8B

EQUIPMENT: Calweld 42 Drill Rig: 24-inch Bucket

LOGGED BY: GS DATE: 12-13-05

DRILLER: Tri Valley Drilling ELEVATION: 1914 feet *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Blows/foot	Sample	DEPTH (FEET)	
						40	firm, plastic sheared clay zones below 43 feet
						41	lenses of black, foliated clay, randomly oriented, with
						42	shattered sandstone and saccharoidal texture to bottom
						43	of boring
						44	
						45	
						46	
						47	
						48	
						49	
						50	
						51	
						52	
						53	
						54	
						55	
						56	
						57	
						58	
						59	

* Topographic Survey by Howard W. Brunner, dated October 2005.

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Drwn: jj

Date: Apr 2006

LOG OF BORING 3

Cornell Winery

245 Wappo Road

Santa Rosa, California

PLATE 8C

EQUIPMENT: Calweld 42 Drill Rig: 24-inch Bucket

LOGGED BY: GS DATE: 12-13-05

DRILLER: Tri Valley Drilling ELEVATION: 1914 feet *

Other Laboratory Tests	Dry Density (pcf)	Moisture Content (%)	% Passing #200 Sieve	Blows/foot	Sample	DEPTH (FEET)	
						60	MOTTLED BLUE GRAY SHEARED SHALE, firm, plastic to friable, fresh to slightly weathered, contains locally foliated clayey seams and lenses and pockets of shattered graywacke exhibiting extremely closely spaced fractures and saccharoidal texture, predominantly matrix supported (Franciscan Complex).
						61	
						62	
						63	Bottom of boring at 63 feet.

* Topographic Survey by Howard W. Brunner, dated October 2005.

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Drwn: jj
Date: Apr 2006

LOG OF BORING 3
Cornell Winery
245 Wappo Road
Santa Rosa, California

PLATE 8D

APPENDIX D - DISTRIBUTION

Cornell Farms, LLC (3,1)
% Guy Davis
2555 Laguna Road
Santa Rosa, CA 95401

Atterbury & Associates (4,1)
Attn: Tom Atterbury
16109 Healdsburg Avenue, Suite D
Healdsburg, CA 95448

GDS:JJP:GWR:EGC:lw

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Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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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

This statement and attachments constitute the **Mitigated Negative Declaration** as proposed for or adopted by the Sonoma County decision-making body for the project described below.

File No.: UPE07-0008 **Planners:** David Hardy

Project Name: Henry Cornell Winery

Project Description:

The applicant's request is for a winery with a maximum annual production capacity of 10,000 cases. The proposal includes construction of an 18,670 square foot building and a 8,670 square foot cave for barrel storage. The project would require a substantial amount of grading (approx. 3,000 cubic yards) to terrace the site for the proposed buildings. The plans indicate space for approximately 22 parking spaces. A new water tank would be constructed for fire protection and domestic use. The building and caves would contain all winery operations and equipment.

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. 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 vineyard. Domestic wastewater from staff and customers would be processed using a conventional septic system with disposal in a leach field downhill and to the north of the proposed winery. The existing wells on the ridge to the northeast will supply the winery with water. Stems and pomace would be disced back into the vineyard and not burned.

A 540 square foot kitchen is proposed in the 2,640 square foot hospitality area of the winery. The kitchen use will be limited to wine industry sales and marketing representatives for wine and food pairings at a frequency of ten dinners per year with a maximum number of ten dinner guests at one time. No special events are proposed.

Project Location: 245 Wappo Road, Santa Rosa

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.

Initial Study: Attached

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 #: PLP07-0008
PROJECT: Henry Cornell Winery

PLANNER: Dave Hardy
DATE: September 2008

LEAD AGENCY: Sonoma County Permit and Resource Management Department

PROJECT LOCATION: 245 Wappo Rd., Santa Rosa

APPLICANT NAME: W. Guy Davis

APPLICANT ADDRESS: 52 Front St., Healdsburg CA

GENERAL PLAN DESIGNATION: Resource and Rural Development, 100 acre density

ZONING: RRD (Resource and Rural Development), B6-100 acre density, BR (Biotic Resources)

DESCRIPTION OF PROJECT:

The applicant's request is for a winery with a maximum annual production capacity of 10,000 cases. The proposal includes construction of an 18,670 square foot building and a 8,670 square foot cave for barrel storage. The project would require a substantial amount of grading (approx. 3,000 cubic yards) to terrace the site for the proposed buildings. The plans indicate space for approximately 22 parking spaces. A new water tank would be constructed for fire protection and domestic use. The building and caves would contain all winery operations and equipment.

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. 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 vineyard. Domestic wastewater from staff and customers would be processed using a conventional septic system with disposal in a leach field downhill and to the north of the proposed winery. The existing wells on the ridge to the northeast will supply the winery with water. Stems and pomace would be disced back into the vineyard and not burned.

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SURROUNDING LAND USES AND SETTING: Briefly describe the project's surroundings:

The project site is largely undeveloped other than the access road, an existing single family residence,

and fencing around the residence, which is several hundred feet southwest of the winery site, which is located on a knoll adjacent to the access road. The knoll has been grubbed and cleared and erosion control measures put in some places at the top of drainages. The only vineyard on the parcel is a small one associated with the residence. Most of the vineyard that will supply the winery is located on abutting land owned by Cornell. The project site is not located in a designated scenic resource area. There is a small area of Biotic Resources/Critical Habitat Areas (reflecting the serpentine soils in the area that support unique plant species) at the southern edge of the site, but it is over 600 feet away from the proposed winery.

Land use in the project vicinity is rural. The south side of Mark West Creek is largely forest land along most of St. Helena Road. The north side of the road is interspersed with forest and chaparral scrub, some of the latter having been cleared for pasture and for vineyards. The nearest off site neighboring dwellings are more than 1,300 feet to the south. There is an old Christmas tree farm on St. Helena Road southwest of the 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 2 miles west of the site. Parcels in this area range from over 120 acres to less than 5 acres in size. Zoning is Resource and Rural Development, with 100 acre density.

Other Public Agencies whose approval is required (e.g. permits, financing approval, or participation agreement): Regional Water Quality Control Board

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.

X Aesthetics	___ Agricultural Resources	X Air Quality
___ Biological Resources	X Cultural Resources	X Geology/Soils
___ Hazards & Hazardous Materials	X Hydrology/Water Quality	___ Land Use and Planning
___ Mineral Resources	X Noise	___ Population/Housing
___ Public Services	___ Recreation	___ Transportation/Traffic
___ Utilities/Service Systems	___ 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.

X 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 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.

The environmental documents which constitute the Initial Study and provide the basis and reasons for this determination are attached or referenced herein, and hereby made a part of this document.

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.

X Project Application and Description
X Initial Data Sheet
X Sonoma County General Plan and Associated EIR
X Specific or Area Plan
X Sonoma County Zoning Ordinance
X Sonoma County Rare Plant Site Identification Study
X Project Referrals from Responsible Agencies
X State and Local Environmental Quality Acts (CEQA)
X UPE03-0092 File
X Supplemental Groundwater Availability Study, Todd Engineers, August 2006
X Groundwater Letter updates, Todd Engineers, April 27, 2007, and June 12, 2007
X Preliminary Geologic Study, RGH Consultants, Inc. May 31, 2007, updated April 22, 2008
X Review of Supplemental Groundwater Studies by Kleinfelder, dated March 8, 2008
X Review of RGH Reports by Kleinfelder, dated July 2, 2008
X A Cultural Resources Survey, Eileen Steen and Thomas M. Origer, M.A., March 12, 2007

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.

1. **AESTHETICS** Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	____	____	____	X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	____	____	____	X

Comment: The area to be developed is not visible from any public view sheds or scenic vistas.

Comment: The project is not in a designated scenic resource area, is not visible from public offsite areas, and is not on a state scenic highway.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?	___	___	X	___

Comment: The new building and cave will not substantially degrade the existing visual character or quality of the site and its surroundings.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	___	X	___	___

1.d. Less than Significant with Mitigation Incorporation. The proposal, for a winery, will include new exterior lighting. To ensure that new sources of light do not adversely the impact the area, the following mitigation measure has been incorporated into the project:

Mitigation Measure 1.d: Prior to issuance of building permits, an exterior lighting plan shall be submitted for review and approval by PRMD Project Review staff. 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 shall be full cut-off fixtures and shall not exceed 4 feet in height. Lighting shall shut of automatically after closing and security lighting shall be motion-sensor activated.

Mitigation Monitoring 1.d: The Permit and Resource Management Department shall not issue the building permit until an exterior night lighting plan has been reviewed and approved by PRMD Project Review staff and is consistent with the approved plans and County Design Standards. The Permit and Resource Management Department shall not sign off the Building Permit for occupancy until a site inspection of the property has been conducted that indicates all lighting improvements have been installed according to the approved plans and conditions. If light and glare complaints are received, the Permit and Resource Management Department shall conduct a site inspection and require the property be brought into compliance or procedures to revoke the permit and terminate the use shall be initiated.

2. AGRICULTURE RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. Of Conservation as an optional model to use in assessing impacts on agriculture and farmland. 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: 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.

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) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use? ____ ____ ____ X

Comment: The proposed facility would be used for processing of agricultural products. The project would not convert prime farmland, unique farmland, or farmland of statewide importance to a non-agricultural use.

3. **AIR QUALITY**

	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) 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.

Project architectural drawings dated June 20, 2008, prepared by Backen Gillam Architects show a fireplace between the hospitality area and the fermentation room. Wood smoke from fireplaces and wood stoves are sources of pollutants receiving increasing scrutiny and generating numerous complaints to the BAAQMD. Although constituting a very small percentage of the total PM10 emissions on an annual basis, wood smoke is a major contributor to reduced visibility and reduced air quality on winter evenings in both urban and rural areas. Sonoma County building regulations restrict fireplaces to natural gas fireplaces, pellet stoves and EPA-Certified wood burning fireplaces or stoves. With the regulatory restriction on fireplace design, this would be a less than significant impact.

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 PM10 (fine particulate matter) The project will not have a significant long-term effect on PM10, because all disturbed surfaces will be paved or landscaped, and dust generation will be insignificant. See 3b for a discussion of ozone.

PM_{10} is a criteria pollutant that is closely monitored in the NSCAPCD. Readings in the district have exceeded state standards on several occasions in the last several years. The high PM_{10} 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 PM_{10}, 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 PM_{10}) 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 is more than 1,300 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. 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? ___ ___ X ___

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 1,300 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

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?	___	___	X	___

Comment: A referral was sent to the Department of Fish and Game, which did not respond. The new structures will not impact candidate, sensitive, or special status species because the project does not include modifications to any wetland or special habitat.

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 disturbance along a riparian habitat or sensitive natural community. The nearest formally designated Biotic Resource area is located over 600 feet from the development site.

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: See Comment 4.a.

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. 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.

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 600 feet from any critical habitat area or biotic resource, and the biotic resource designation is related to plant species adapted to serpentine soils. The site has previously been grubbed. 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. No significant trees would be removed as a result of the project.

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
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. No paleontological resources or unique geologic features are evident on site.

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.

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
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 site was prepared by RGH consultants, Inc., dated May 31, 2007, and updated April 22, 2008. The updated RGH report was reviewed on behalf of the County of Sonoma by Kleinfelder in a letter by William McCormick prepared July 2, 2008. RGH conducted numerous excavations at the winery property to evaluate the site's suitability for construction of the proposed project. RGH concludes, "Based upon the results of our geologic data review, site reconnaissances and subsurface explorations, we judge that it is currently geologically and geotechnically feasible to construct a winery and related improvements at the planned site." RGH notes: "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." Nevertheless, the site is located approximately seven miles northeast of the Healdsburg-Rodgers Creek Fault Zone, and there are other faults in the vicinity. Therefore, according to RGH, "future seismic shaking should be anticipated at site. It will be necessary to design and construct the proposed winery and related improvements in strict adherence with current standards for earthquake-resistant construction, as will be recommended in a future Geotechnical Study." Kleinfelder agreed with the revised geologic mapping by RGH, and states: "Based on their supporting data, conclusions and recommendations, it is our opinion that the updated RGH report has adequately identified the existing and potential geologic hazards at the site and that they have demonstrated geotechnical feasibility for a winery project, from a preliminary or planning viewpoint. As stated in their report, a detailed, site-specific Geotechnical Study should be prepared prior to final design and construction of the project."

Mitigation Measure 6.a.i: The Project shall comply with all recommendations contained in the Preliminary Geologic Study prepared by RGH Consultants, Inc. dated April 22, 2008. Compliance with these recommendations would reduce geology and soils impacts to a less-than-significant level. In addition, a detailed, site-specific Geotechnical Study shall be prepared and submitted with grading and construction plans. Said Study shall address all issues raised in the Preliminary Geologic Study and review by Kleinfelder, and shall insure that the construction of the winery is engineered to eliminate the probability of downward creep, erosion, landslides, and soil/bedrock expansion.

Mitigation Monitoring 6.a.i: Prior to approval of the grading, drainage, and construction plans for the project, PRMD Project Review staff shall ensure that the Geotechnical Study is submitted for Engineering Division Review and Approval.

ii) Strong seismic ground shaking? ___ ___ X ___

Comment: As noted in the RGH report, the site may be subject to strong seismic ground shaking as is all of Sonoma County. The California Building Code and the adopted codes and policies of Sonoma County have been developed to address seismic hazards to the most reasonable extent possible. All new construction must comply with the seismic design requirements of the Building Code. RGH states: "Provided the proposed fills and foundations, as applicable, are adequately keyed into underlying bedrock material, as will be recommended in a future Geotechnical Study report, we judge the potential for impact to the proposed winery from the occurrence of these phenomena (seismic slope failure or lurching) at the winery site is low to moderate.

iii) Seismic-related ground failure, including liquefaction? ___ ___ X ___

Comment: The Schematic Map of Areas Subject to Safety Policy Requirements of the Sonoma County General Plan (Figure PS-1e) indicates that the site is outside the area of high to moderate potential for liquefaction. The Preliminary Geologic Study prepared by RGH Consultants, Inc. states "We did not observe subsurface conditions ...that would suggest the presence of materials that may be suceptible to seismically induced densification or liquefaction." The Study concludes that the probability of liquefaction is low. The applicant must submit a building permit application including construction design plans for Sonoma County's review and approval. This review process ensures the structures would be adequately designed to California Building Code standards.

Iv) Landslides? ___ X ___ ___

Comment: The Schematic Map of Areas Subject to Safety Policy Requirements of the 1989 Sonoma County General Plan (Figure PS-1e) indicates that the site is within the area of high to moderate potential for landslides. The RGH report notes that previous mapping indicates three major landslides in the vicinity. In addition, RGH encountered active, dormant, and ancient landslides on the property. "The dormant landslide on the north-northeast extends onto the northern end of the new proposed winery configuration, a portion of the cave, and roadway...Preliminarily, we estimate the middle and lower portions of this landslide to be in the 15- tp 25-foot depth range but will need to be verified during a site specific geotechnical study." The report observes that "Creep and creep prone soils and shallower landslides can be mitigated during the normal course of grading. Avoiding or setting structures back from landslides is also a feasible mitigation. The dormant translational landslide on the north-northeastern portion of the proposed winery will require reconstructing portions or the entire landslide, depending on the planned grading, as drained , buttressed fills bearing below the landslide plane." The use of buttressed fills and reconstructing landslides are to be addressed during a detailed site-specific report.

Mitigation Measure 6.a.iv: The Project shall comply with all recommendations contained in the Preliminary Geologic Study prepared by RGH Consultants, Inc. dated April 22, 2008.Compliance with these recommendations would reduce geology and soils impacts to a less-than-significant level. In addition, a detailed, site-specific Geotechnical Study shall be prepared and submitted with grading and construction plans. Said Study shall address all issues raised in the Preliminary Geologic Study and review by Kleinfelder, and shall insure that the construction of the winery is engineered to eliminate the probability of downward creep, erosion, landslides, and soil/bedrock expansion.

Mitigation Monitoring 6.a.iv: Prior to approval of the grading, drainage, and construction plans for the project, PRMD Project Review staff shall ensure that the Geotechnical Study is submitted for Engineering Division Review and Approval.

b) Result in substantial soil erosion or the loss of topsoil? ____ X ____ ____

Comment: The proposed winery construction would require grading and could result in a minor loss of topsoil. The RGH report observes that "the natural drainages of the site trend westerly into a deep ravine that trends southwesterly through the northwestern portion of the subject parcel. The ravine trends off the parcel and into a second 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 project description estimates approximately 2,500 cubic yards of excavation and approximately 500 cubic yards of fill. The RGH report states that uncontrolled erosion "could induce sloughing, new landsliding or landslide reactivation." The report also states that the "long-term satisfactory performance of winery improvements and roadways constructed on hillsides results primarily from strict control of surface runoff and subsurface seepage. The site's surface soils have a moderate to high erosion potential depending on slope inclination." To avoid these problems, the report recommends that roof downspouts from the winery should discharge into closed glued pipes that empty away from steep and/or potentially unstable areas. 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.

Mitigation Measure: See 6.a.iv. above

Mitigation Monitoring: See 6.a.iv. above

Comment: Cave construction may generate surplus soils for disposal off-site, and improper disposal of this material could affect off-site wetlands or other sensitive habitats. The impact can be reduced to

less than significant by controlling the disposal of surplus soils, as required in the following mitigation measure.

Mitigation Measure 6b: All surplus and excavated soils shall be retained onsite subject to the provisions of 6.a.iv above. All surplus soils that cannot be used on the project site shall be disposed of at an acceptable disposal site. If any areas outside the project site are used for disposal or stockpiling of soil or other materials, the contractor shall be required to demonstrate that the site has all the required permits, including, if applicable, a grading permit.

Mitigation Monitoring 6b: The contractor shall be required to provide evidence to the County that the disposal site does not affect wetlands under the jurisdiction of the Army Corps of Engineers, or that the site has the appropriate permits.

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?	___	X	___	___

Comment: See response to 6.a.iv.

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?	___	X	___	___

Comment: 6a.iv. 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?	___	___	X	___

Comment: The domestic wastewater is proposed to be disposed in a new leach field approximately 150 feet north of the proposed winery. 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 (SEV06-1209). The test results were reviewed by the environmental health specialist for that area on January 10, 2007, and the proposed location was approved for eventual construction of a system designed by a registered environmental health specialist or civil engineer.

7. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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 on a knoll where substantial brush clearing has occurred, providing 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.

8. 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?	____	____	X	____

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 Environmental Health Specialist - Project Review, 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)." 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."

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."

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, which are to be used only as receptacles for water from rooftops and hard surfaces. The RGH Study identifies high erosion potential and recommends engineered site-specific drainage improvements to eliminate erosion and siltation in watercourses. See 6.a.iv 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 shall include a site grading plan and an erosion control plan as part of the required improvement drawings. The Permit and Resource Management Department will not issue a grading or building permit until evidence is submitted and approved by the Drainage Review section of PRMD 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.

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 8c.

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 8.a. above.

f) Otherwise substantially degrade water quality?	___	___	X	___

Comment: Refer to 8.a. and 8.c. above. The project development requires permits to be approved by the North Coast Regional Water Quality Control Board and the Well and Septic Sections 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: There is no housing associated with the project.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	___	___	___	X

Comment: No structures would be placed within any flood plains.

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 site is not in an area subject to flooding or below a levee or dam.

j) Inundation by seiche, tsunami, or mudflow?	___	___	___	X

Comment: The site is not subject to seiche, tsunami or mudflow.

9. **LAND USE AND PLANNING** Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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 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 by 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 Measure 6.a.iv above.

Mitigation Monitoring: See Mitigation Measure 6.a.iv 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 has occurred, providing 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 provisions reduce the potential exposure to people or structures to a less than significant level. No mitigation is required.

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.

10. **MINERAL RESOURCES** Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No 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 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.

11. **NOISE** Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No 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 offsite nearest residence, which is approximately 1,300 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 1,300 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 11 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 11 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.

12. **POPULATION AND HOUSING** Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No 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 existing housing or necessitate the construction of housing elsewhere.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	___	___	___	X

Comment: See Comment 12.b

13. **PUBLIC SERVICES**	Potentially Significant Impact	Less than Significant 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?	___	___	X	___
Police protection?	___	___	___	X
Schools?	___	___	___	X
Parks? ___	___	___	X	
Other public facilities?	___	___	___	X

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.

14. **RECREATION**	Potentially Significant Impact	Less than Significant 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.

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: No recreation facilities are proposed.

15. **TRANSPORTATION/TRAFFIC** Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	___	___	X	___

Comment: The site is accessed via by Wappo Road, a private road off of St. Helena Road northeast of the City of Santa Rosa. The project would result in a negligible increase in daily volumes on the Road. Even with projected increase in traffic volumes, traffic would continue to operate at LOS A overall. The County General Plan requires that a LOS C be maintained as a standard. The project was reviewed by a representative of the Sonoma County Department of Public Works, who made a determination that roads serving the site were adequate. The applicant states that a reduction of agricultural truck traffic will occur because grapes will no longer be shipped off-site for processing.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	___	___	___	X

Comment: See Comment 15.a.

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: The project would not 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.

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: A determination has been made by the Transportation and Public Works Dept. that the project will not increase hazards.

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)	Result in inadequate parking capacity?	___	___	___	X

Comment: The design provide approximately 22 parking spaces, which would be adequate to serve the intensity of the requested use.

g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (E.g., bus turnouts, bicycle racks)?	___	___	___	X

Comment: The proposed project does not conflict with alternative transportation plans or policies.

16. **UTILITIES AND SERVICE SYSTEMS**
Would the project:

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No 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 16.a. above in this initial study. The proposed project is not served by public sewer and all process wastewater will be disposed of 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 stormwater system or cause

significant environmental effects. 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.

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.

17. **MANDATORY FINDINGS OF SIGNIFICANCE**	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
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	___

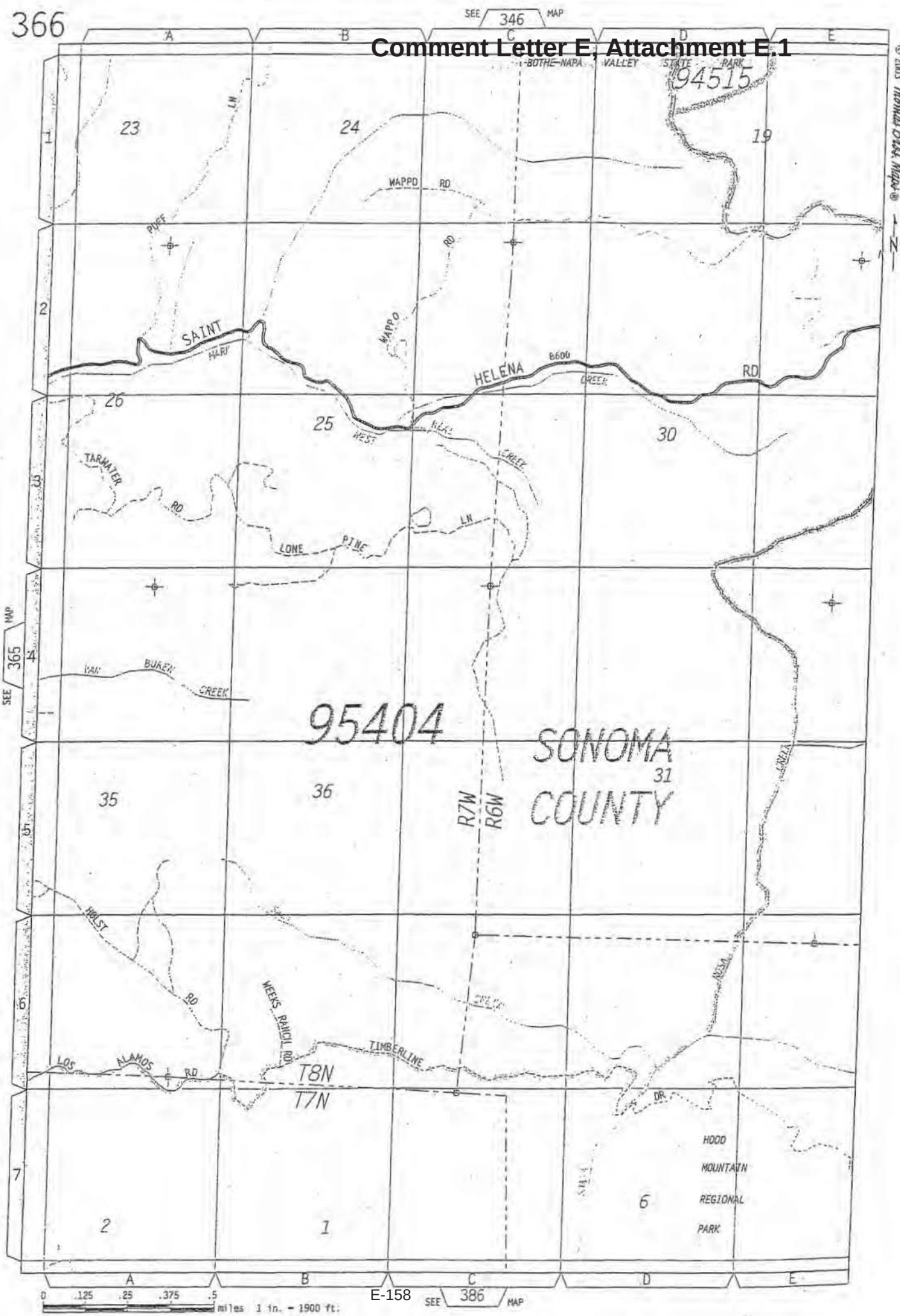
Comment: The project site is developed with existing structures, an adjacent vineyard, and fencing. The project development does not include any work within a creek. The project would not substantially interfere with the movement of migratory fish or wildlife species. Based on the above information it is concluded the project site has no habitat for sensitive species that could be affected by the project.

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 that Significant level on both a project and cumulative level. In particular, the Groundwater Study demonstrates that cumulative impacts would be less than significant. Traffic mitigation fees are required to be paid to assist with the overall County roadways maintenance costs.

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.


366
SEE 346 MAP
A
B
C
D
E
BOTHE-NAPA VALLEY STATE PARK
94515
23
24
19
WAPPO RD
PUFF LN
SAINT MARY
WAPPO RD
HELENA RD
BEGG CREEK
26
25
30
WEST
CREEK
TARWATER RD
LONE PINE LN
SEE 365 MAP
VAN BUREN CREEK
95404
SONOMA COUNTY
35
36
31
R7W
R6W
HOLST RD
WEEKS RANCH RD
TIMBERLINE
LOS ALAMOS RD
T8N
T7N
DR
HOOD MOUNTAIN REGIONAL PARK
2
1
6
7
0 .125 .25 .375 .5 miles 1 in. = 1900 ft.
SEE 386 MAP
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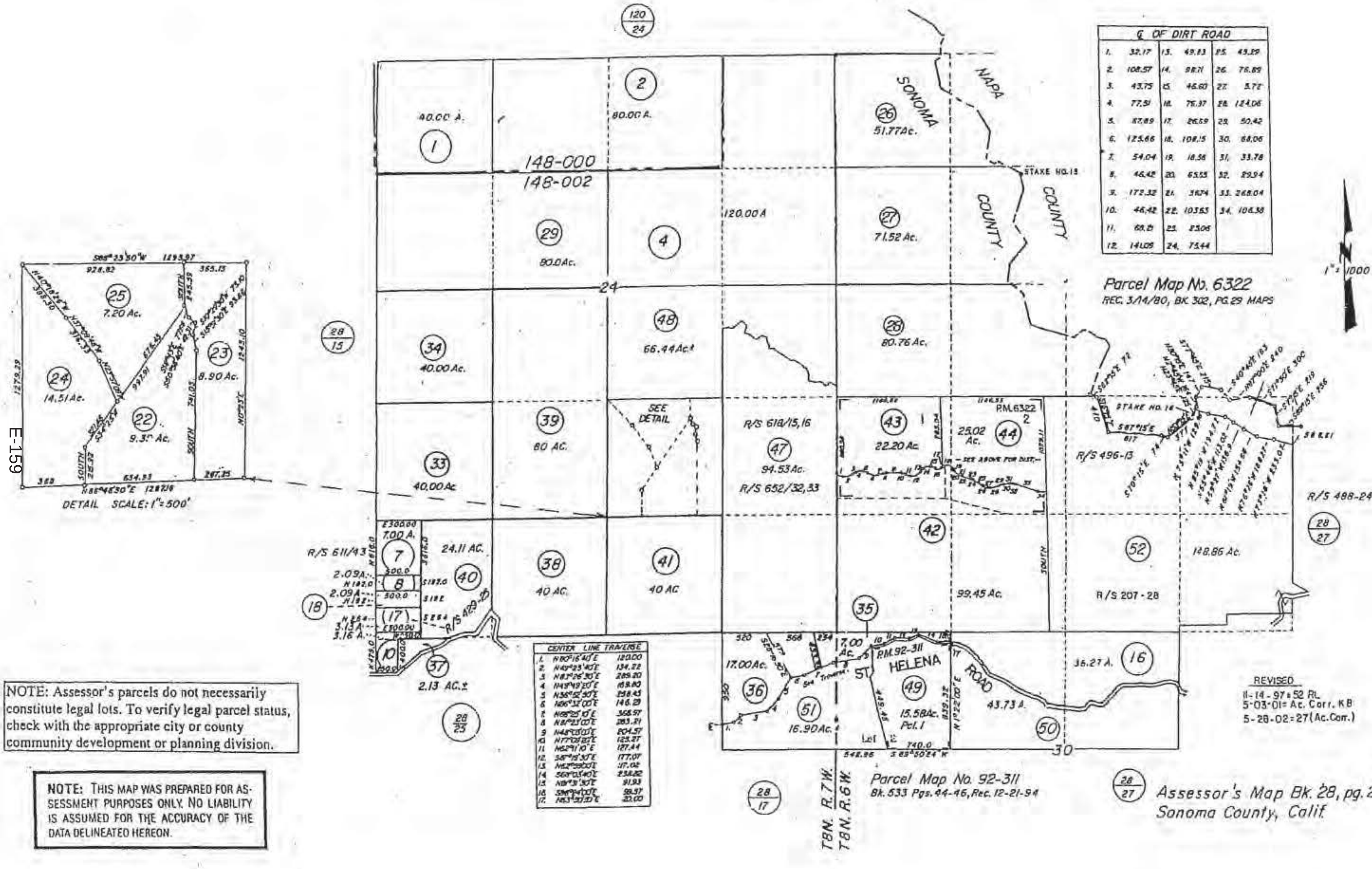
NAPA & SONOMA

COUNTY ASSESSOR'S PARCEL MAP

TAX RATE AREA
148-000
148-002

28-26

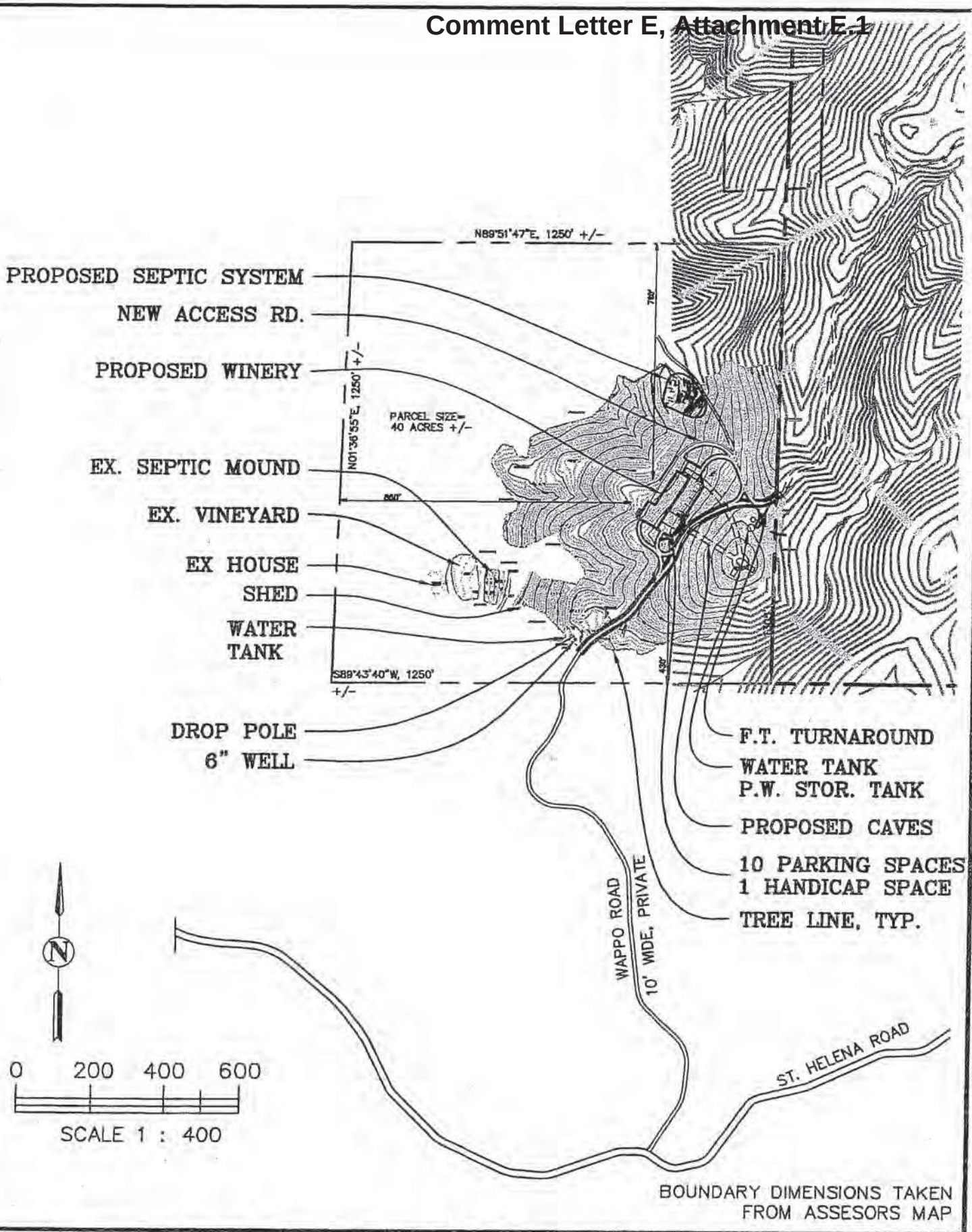


℄ OF DIRT ROAD					
1.	32.17	13.	49.83	25.	43.29
2.	108.57	14.	98.71	26.	76.89
3.	43.75	15.	46.60	27.	5.72
4.	77.51	16.	75.37	28.	124.06
5.	87.89	17.	26.59	29.	50.42
6.	125.66	18.	108.15	30.	68.06
7.	54.04	19.	18.58	31.	33.78
8.	46.42	20.	65.55	32.	29.94
9.	172.32	21.	36.74	33.	268.04
10.	46.42	22.	103.63	34.	106.38
11.	69.21	23.	25.06		
12.	141.05	24.	75.44		

CENTER LINE TRAVERSE		
1.	N80°16'40"E	120.00
2.	N49°25'40"E	134.22
3.	N83°26'30"E	289.20
4.	N43°49'20"E	169.80
5.	N36°52'30"E	258.45
6.	N86°32'00"E	146.29
7.	N68°25'10"E	368.57
8.	N81°23'00"E	283.21
9.	N48°05'00"E	204.57
10.	N77°05'20"E	125.27
11.	N62°11'10"E	127.44
12.	S61°15'30"E	177.07
13.	N62°59'00"E	117.02
14.	S60°05'40"E	234.82
15.	N31°31'30"E	91.93
16.	S36°24'00"E	59.57
17.	N53°50'30"E	20.00

NOTE: Assessor's parcels do not necessarily constitute legal lots. To verify legal parcel status, check with the appropriate city or county community development or planning division.

NOTE: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA DELINEATED HEREON.



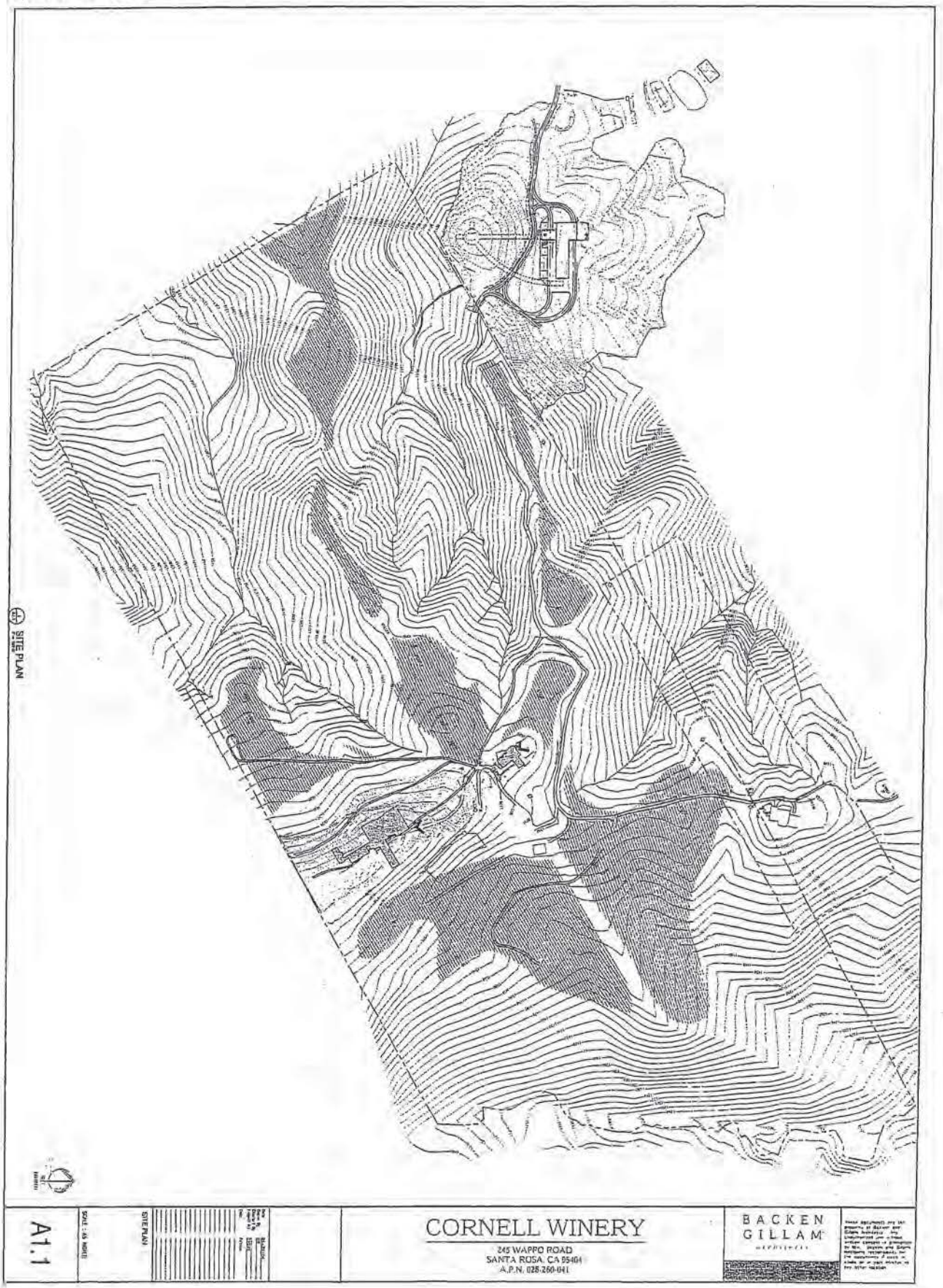
ATTERBURY & ASSOCIATES, INC.
16109 Healdsburg Avenue, Suite D
Healdsburg, CA 95448
(707) 433-0134; Fax (707) 433-0135
e-mail: tatterbury@aol.com

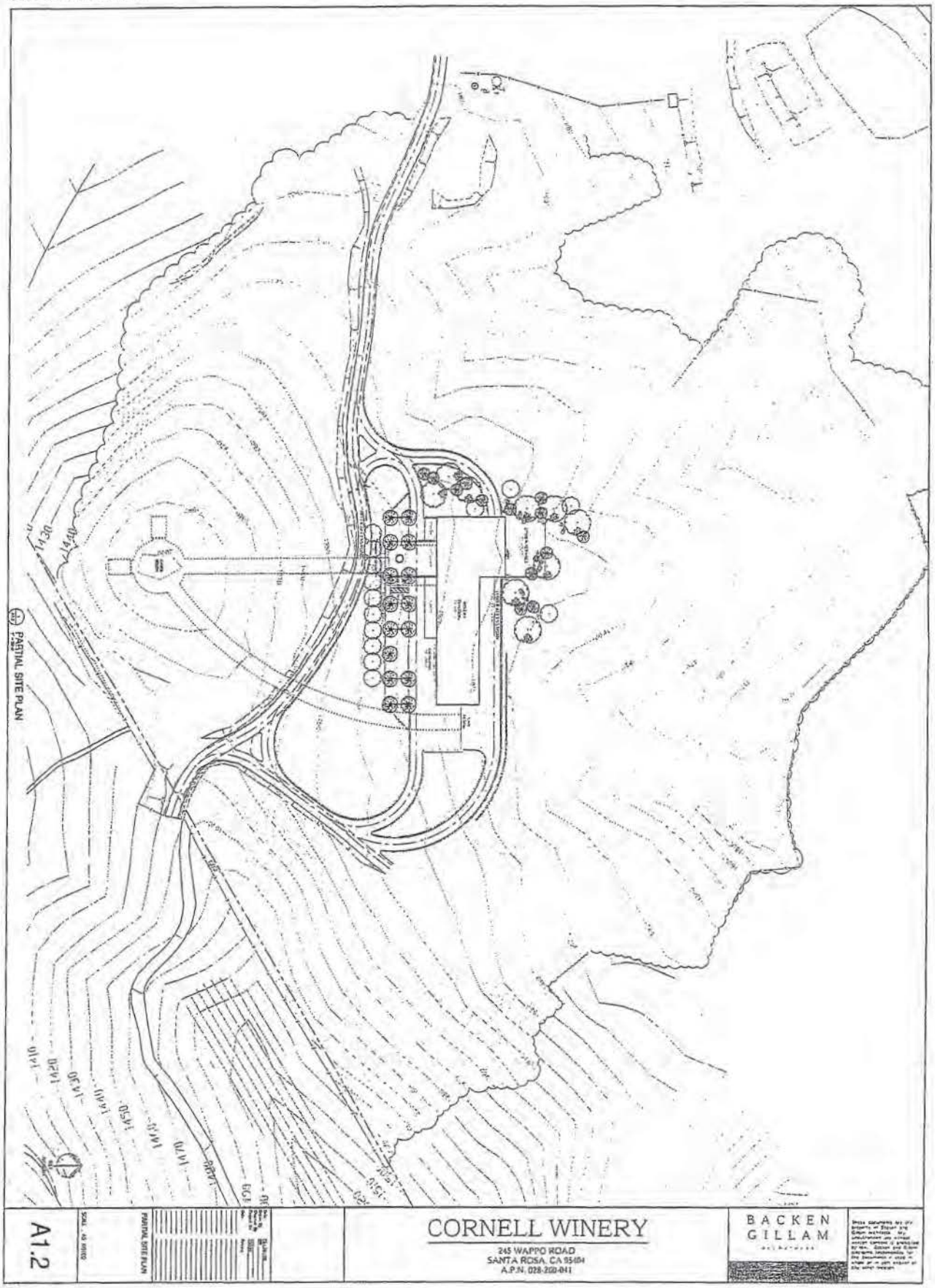
Job: 05-25 Date: 06/30/08

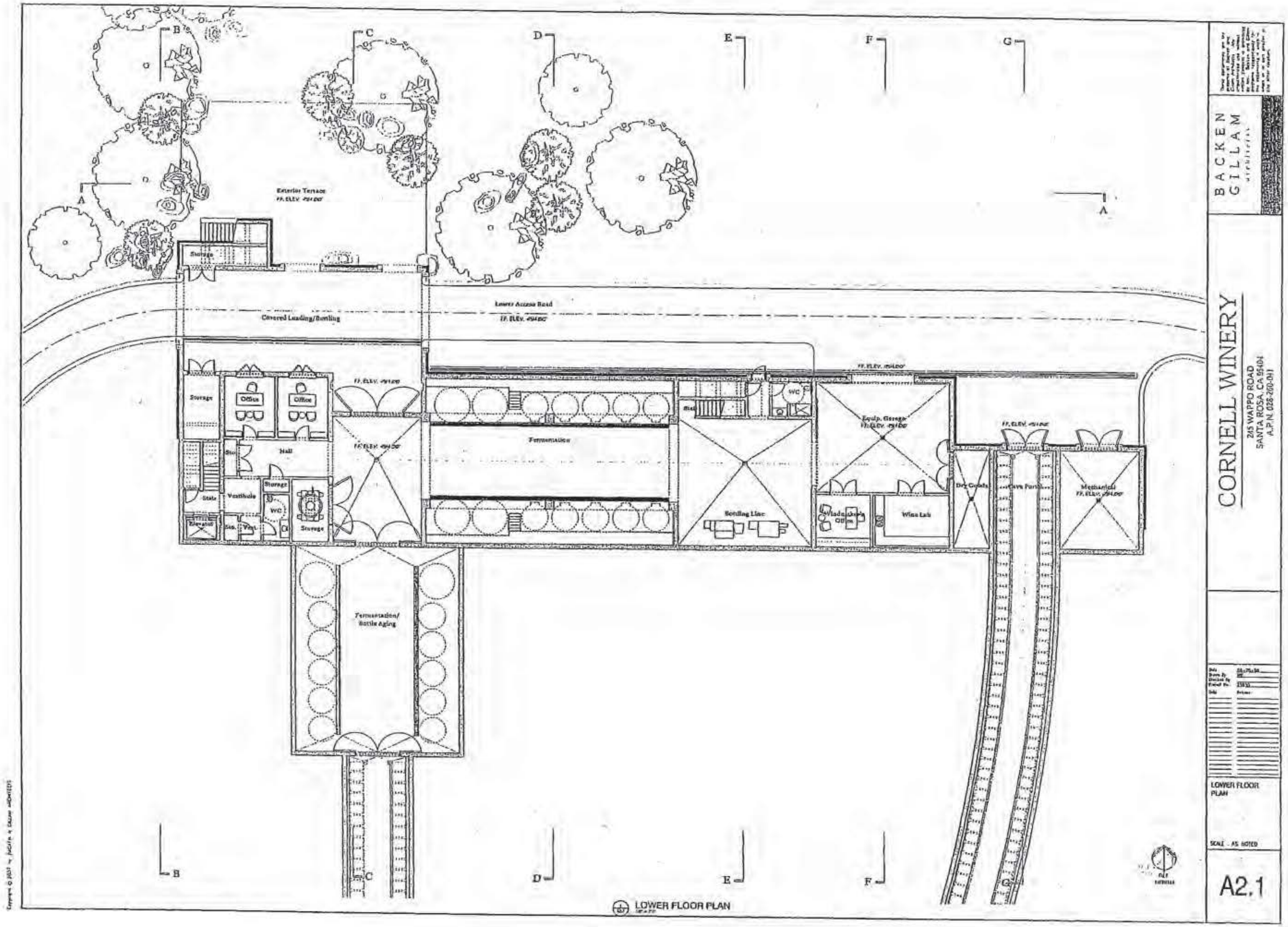
SITE MAP

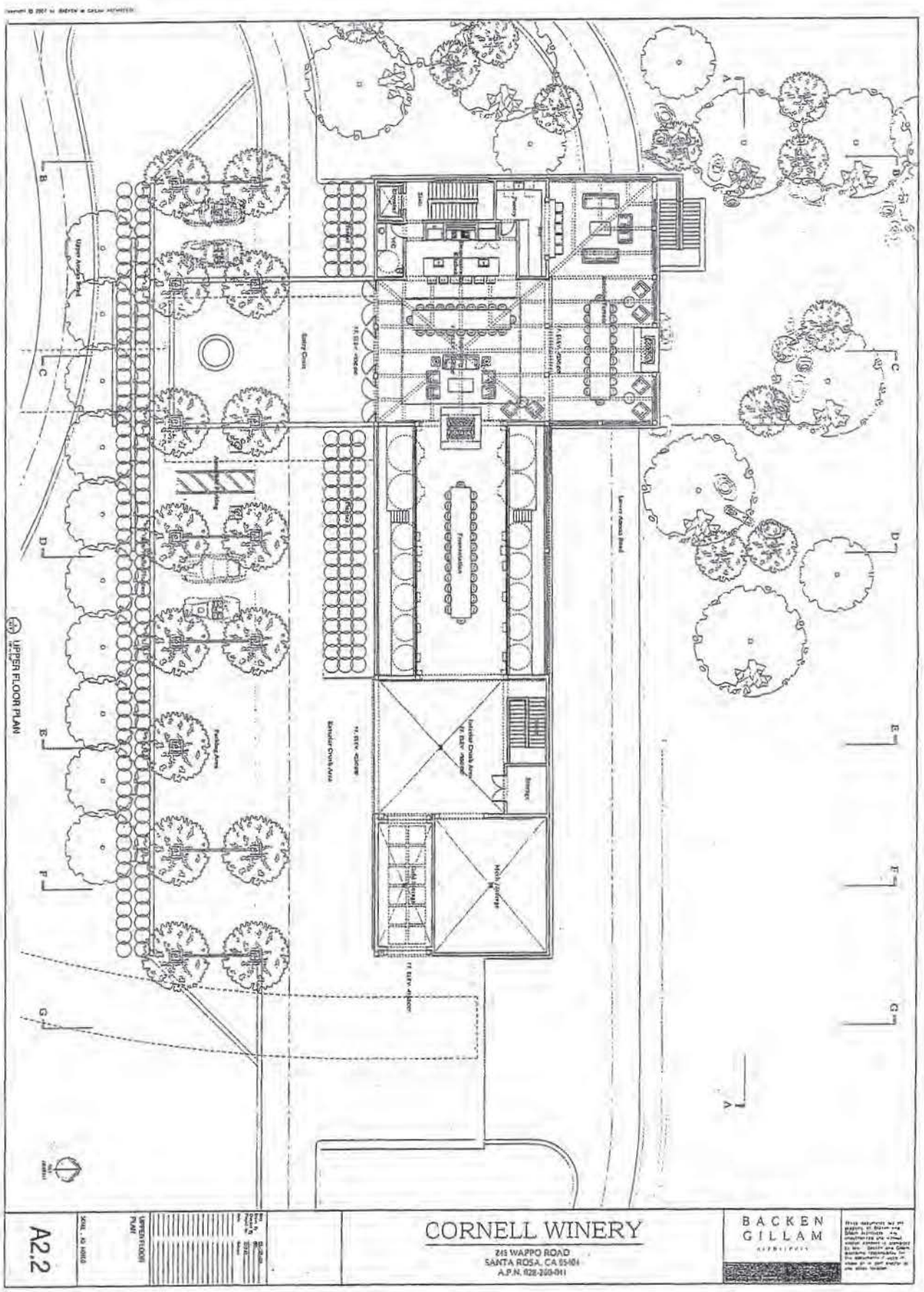
Cornell Vineyards & Winery
245 Wappo Road
Santa Rosa, CA 95404

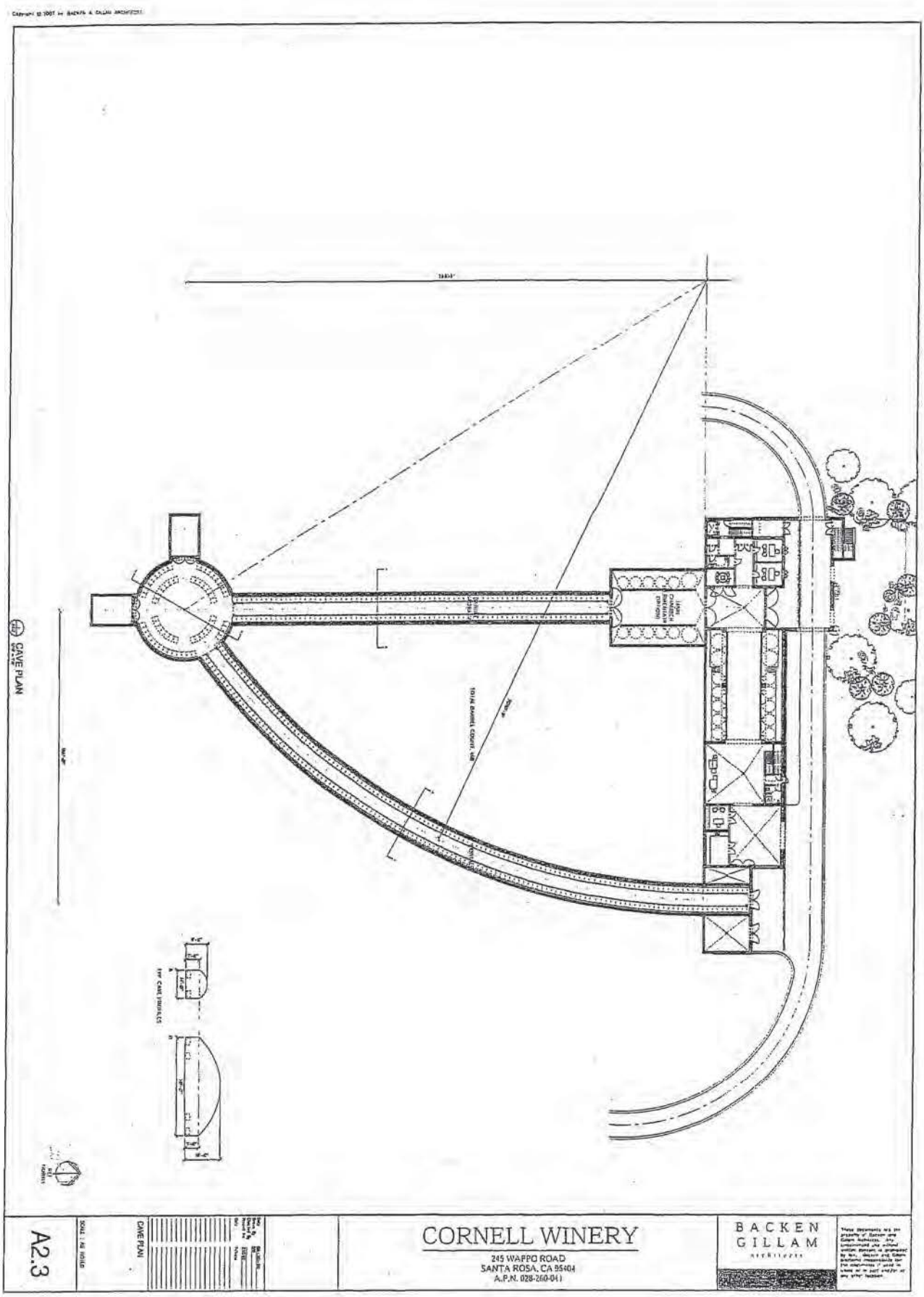
APN 028-260-041

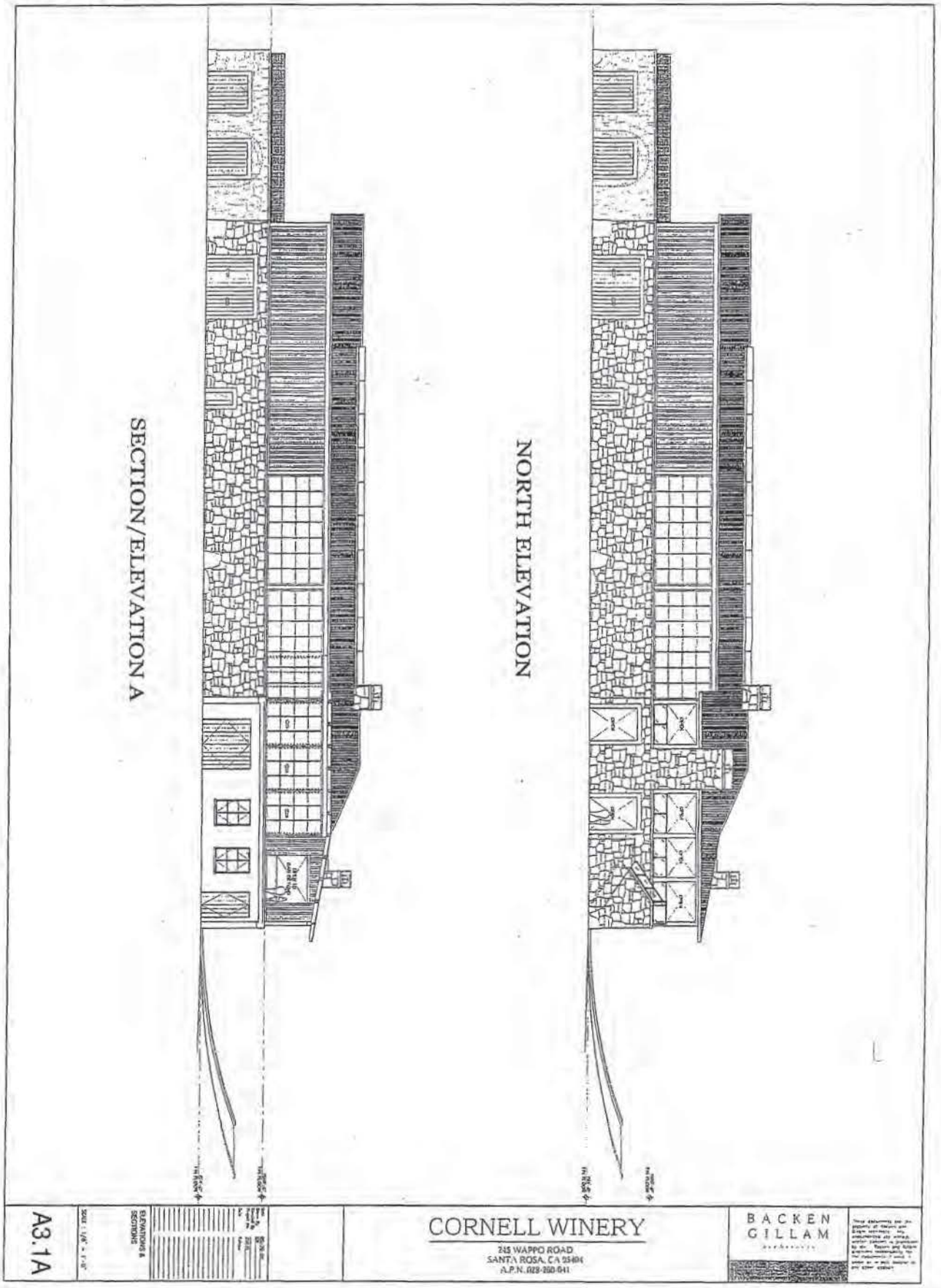

SITE PLAN
A1.1
SITE PLAN
CORNELL WINERY
245 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 028-260-041
BACKEN
GILLAM

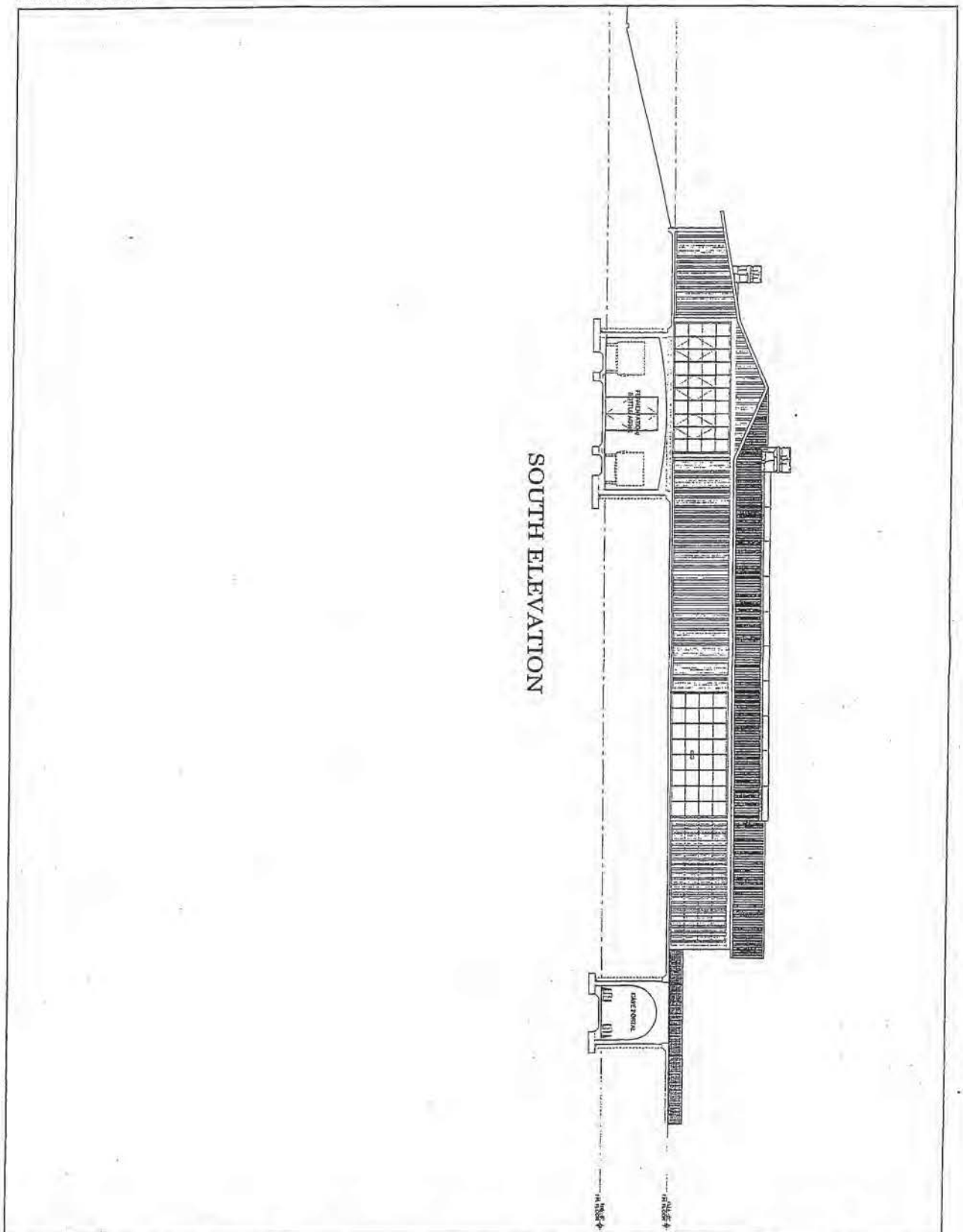

PARTIAL SITE PLAN
A1.2
CORNELL WINERY
245 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 028-200-041
BACKEN
GILLAM

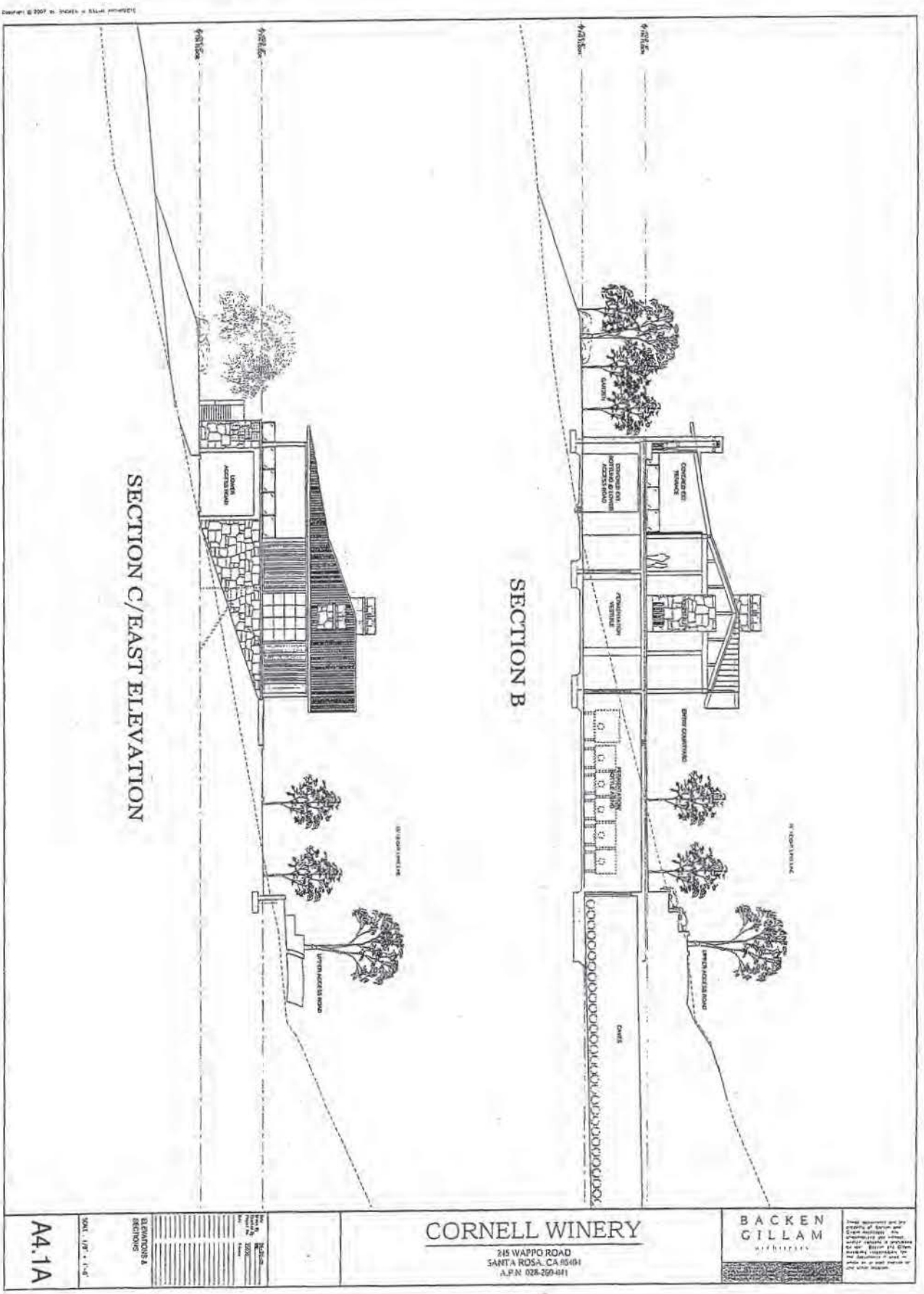

Exterior Terrace
Storage
Covered Loading/Bottling
Lower Access Road
Storage
Office
Office
Hall
Vestibule
Storage
WC
Elevator
Fermentation
Bottling Line
Equip. Garage
Winemaker's Office
Wine Lab
Dry Goods
Cave Portal
Mechanical
WC
Fermentation/ Bottle Aging
LOWER FLOOR PLAN
BACKEN GILLAM
CORNELL WINERY
245 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 028-260-011
LOWER FLOOR PLAN
SCALE - AS NOTED
A2.1

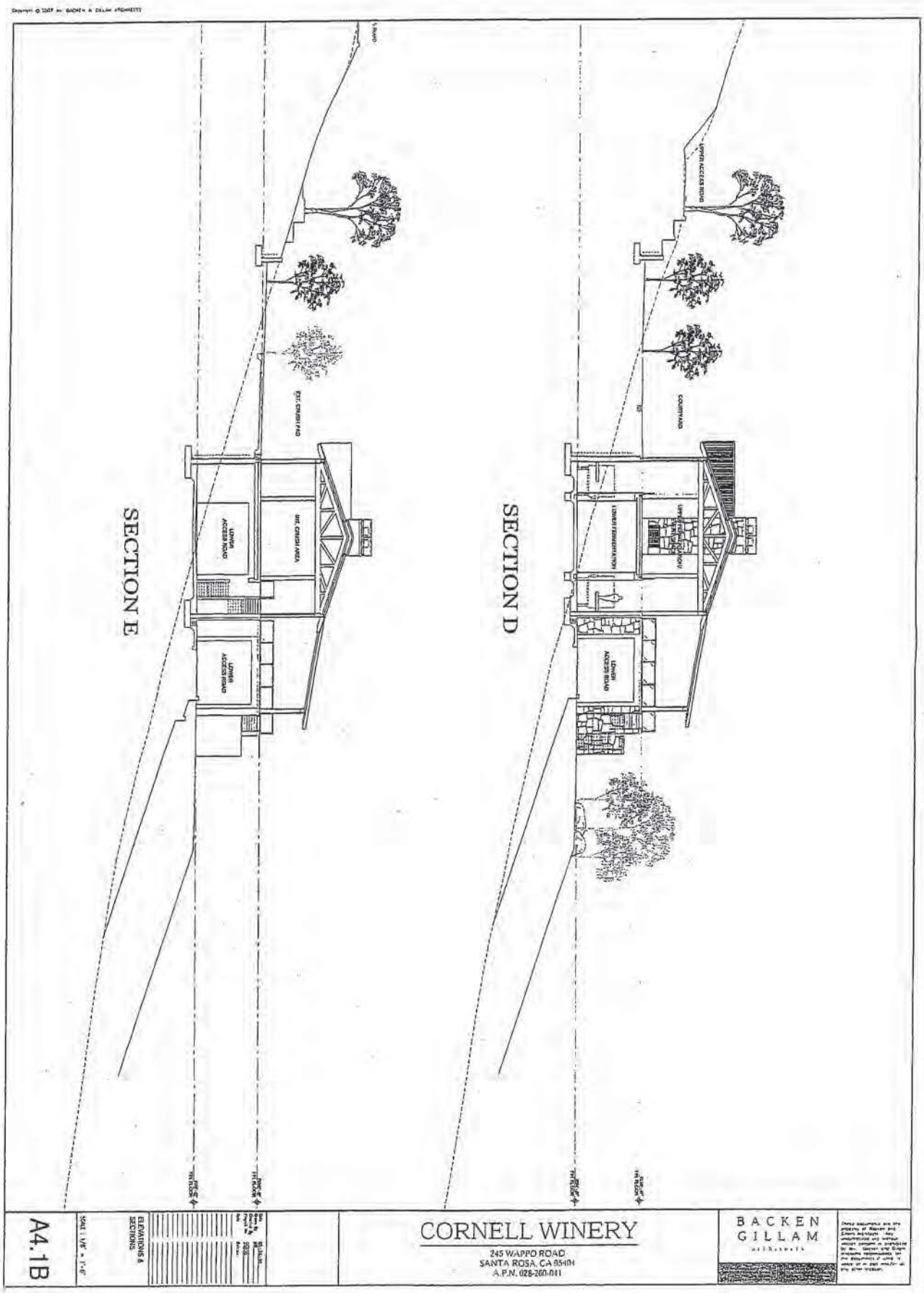

UPPER FLOOR PLAN
A2.2
CORNELL WINERY
215 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 028-200-011
BACKEN GILLAM

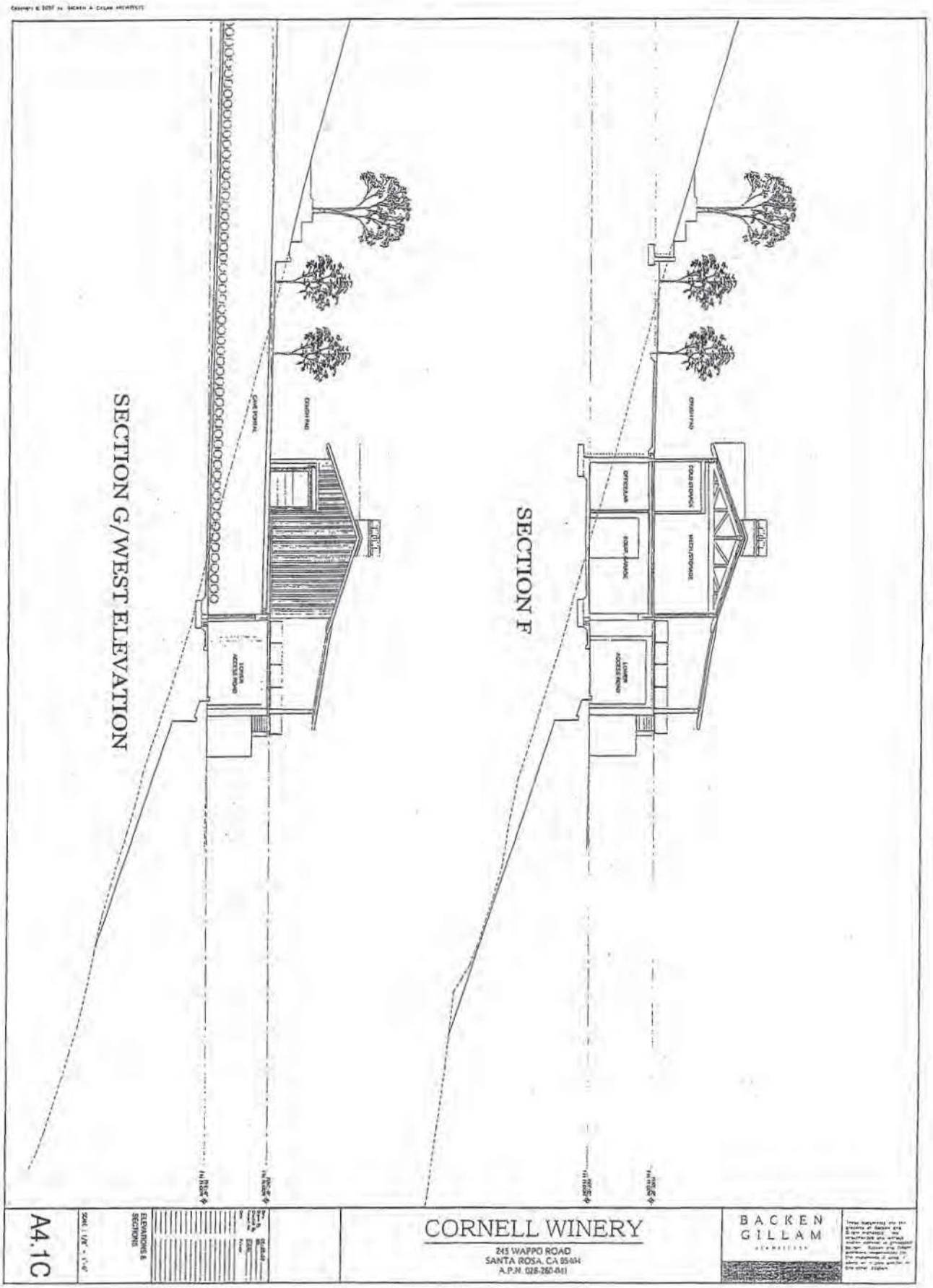

CAVE PLAN
CORNELL WINERY
245 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 028-260-041
BACKEN GILLAM
A2.3
CAVE PLAN


SECTION/ELEVATION A
NORTH ELEVATION
A3.1A
ELEVATIONS & SECTIONS
CORNELL WINERY
215 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 023-260-041
BACKEN GILLAM


SOUTH ELEVATION
CORNELL WINERY
245 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 028-260-041
BACKEN GILLAM
ARCHITECTS
A3.1B
ELEVATIONS & SECTIONS


SECTION C/EAST ELEVATION
SECTION B
CORNELL WINERY
215 WAPPO ROAD
SANTA ROSA, CA 95401
A.P.N. 028-290-041
BACKEN GILLAM
A4.1A


SECTION E
SECTION D
EXT. CRUSH PAD
LOWER ACCESS ROAD
INT. CRUSH AREA
COURTYARD
UPPER ACCESS ROAD
A4.1B
ELEVATIONS & SECTIONS
CORNELL WINERY
245 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 026-260-041
BACKEN GILLAM


SECTION G/WEST ELEVATION
SECTION F
CORNELL WINERY
215 WAPPO ROAD
SANTA ROSA, CA 95404
A.P.N. 028-260-011
BACKEN GILLAM
A4.1C
ELEVATIONS & SECTIONS

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Since 1969
RG 3142 CEG 923
7945 St. Helena Road Santa Rosa, CA 95404
Phone 707-539-2577
Fax 707-539-5773

November 11, 2008

Kimberly Burr
Attorney at Law
P. O. Box 1246
Forestville, CA 95436

Subject: **Geologic Review of Updated RGH Geologic Report In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041.**

ABSTRACT

The proposed project consists of a wine factory to be placed on a west facing slope above a deeply incised tributary to Mark West Creek. An active landslide below the residence at this same address, anomolous topographic features on the ground surface, anomolous topographic features apparent on aerial photographs, mapping of landslides by the California Division of Mines and Geology, mapping of debris flows by the United States Geological Survey and a previous investigation of this site by The Geoservices Group all indicate that this may be a geologically unstable, unsafe site.

A geological site investigation by RGH Consultants, Inc. acknowledges the presence of numerous landslides on the site but fails to perform a stability analysis of the proposed building site. This omission renders the RGH finding of project feasibility meaningless, considering the significant evidence of unstable slopes throughout the site vicinity. On a site like this, where landslides exist, even according to RGH, fully investigating all relevant slope stability issues associated with the project is the top priority, above all other geologic, soils and water availibility issues.

That this mission has not been accomplished is best and most graphically illustrated by RGH themselves on Plates 5A and 5B in Reference 8, Geologic Cross Sections B-B' and C-C' respectively. No geologic structure at depth is shown on the cross sections and the basal slip surfaces of landslides are shown as rows of question marks. **This is a stark acknowledgement that the geologic structure and landslide setting of the site are simply unknown.**

RGH Consultants, Inc. characterizes its report as "Preliminary", as if the fundamental

stability and safety of the site is a minor detail that can be presumed now and dealt with more thoroughly later. That is a totally flawed concept. In the absence of adequate geologic and geotechnical analyses, a decision regarding project feasibility must be based on worst case assumptions.

The method most commonly used to increase the factors of safety against landsliding on unstable slopes to a minimally acceptable level is construction of a buttress fill. A buttress fill is a very large mass of engineeered compacted fill embedded into a slope, below the lowest potential failure surface. The size of the buttress is determined by the Geotechnical Engineer, and must be of sufficient size to provide an adequate factor of safety. Once constructed, the buttress fill supports the slope. However, construction of a buttress fill requires making a large, steep, deep excavation into an already unstable slope. This is a very dangerous procedure because any failure of the temporary excavation can cause a massive failure of the upslope area with potential property damage and personal injury and/or loss of life to workers on the project and/or occupants of upslope properties, and environmental damage.

While such massive corrective grading may be theoretically possible, the logistics of such grading on a steep, unstable slope are likely to be truly daunting. Furthermore, this corrective grading would convert what is now a forested natural slope to a fill slope. All of the existing vegetation, topsoil, landslide debris and unstable bedrock would have to be removed in the areas to receive fill. The project proponents have not provided a topographic map of the natural slope and no geotechnical investigation of the natural slope has been completed. Therefore, it is unknown whether a butress fill is required and, if so, what its dimensions would be and whether it would even fit on the site, given the existing Code requirements for stream setbacks, maximum slope gradients, and drainage terraces on the buttress fill slope face.

To help the reader imagine the size and shape of a buttress fill excavation, the following information is offered. The horizontal base of the buttress excvation, called the "key", is typically several tens of feet wide and ten or more feet deep. A typical residence would fit easily into this excavation. On the uphill side of the "key", a temporary, very steep (usually 45 degrees or 100% slope) "backcut" is made to create a very large void to accommodate the mass of the buttress fill to be constructed. The "backcut" usually must be made at this steep gradient, or else the "backcut" would end up removing the entire ascending natural slope, including the intended building site. Failure of this "backcut" during construction of the buttress fill is an ever present danger. Every engineering geologist experienced in hillside grading has observed the sudden and destructive consequences of buttress fill "backcut" failures.

Much more geologic and geotechnical investigation and analysis is needed now to determine the theoretical and logistical geologic feasibility of the project. Without this additional geologic and geotechnical work, opinions concerning the geologic feasibility of the project are meaningless conjecture.

2

I. INTRODUCTION

In accordance with your request, I have reviewed the updated geologic report (Reference 8) prepared in support of the proposed winery at 245 Wappo Road, in Sonoma County, California. The purpose of the geologic review was to determine whether the stability of the site has been demonstrated and whether the potential impacts of the proposed project have been evaluated in accordance with State laws and standards of care that govern the practice of geology in the State of California.

The scope of the geologic review included the following tasks:

1. Review of published regional geologic and landslide maps and stereo pairs of aerial photographs of the site vicinity (References 1-3).

2. Geologic reconnaissance of the site and examination of earth materials exposed in a deeply incised stream bank at the toe of the slope descending from the site. A photograph of a portion of that stream bank is presented in this review report.

3. Review of previously prepared consultants' reports prepared in support of the project (References 4 and 5).

4. Review of my review of a previous geologic report by RGH in support of the project (Reference 7).

5. Review of the updated geologic report by RGH in support of the project (Reference 8).

6. Review of Kleinfelder's review of the updated geologic report by RGH in support of the project (Reference 9).

7. Preparation of this review report that summarizes my findings.

My qualifications to perform this review consist of the following:

1. California licensure as a Professional Geologist and Certified Engineering Geologist since 1973.

2. Employment in the Engineering Geology Section of the Los Angeles County Department of Public Works from June 1969 through December 1980, with substantial peer review responsibilities.

3. Employment as a Project Engineering Geologist in geotechnical consulting firms from December 1980 through June 2001.

4. Private practice as an Engineering Geologist from June 2001 through the present.

In the course of my County employment I reviewed thousands of projects like the Cornell wine factory. Subsequently, I have investigated countless sites where slope stability was a critical issue that determined project feasibility.

II. PROJECT DESCRIPTION

The proposed project consists of construction of a wine factory. No details of the proposed grading, building construction nor water well development have been provided for my review. I first reviewed this proposed project in 2005, and issued a report of my findings dated January 31, 2005. Since that time defoliation of the intended wine factory site has been performed and a large landslide in a downslope area below the residence at 245 Wappo Road has occurred.

III. BACKGROUND INFORMATION

Prior to 1970, the standards of care for the practice of geology were the responsibility of local jurisdictions and were very inconsistent. On June 30, 1970 the Geologist Registration Act became effective. From that time forward, professional geologists and various specialties within the profession of geology have been licensed by the State of California.

Other laws, requirements and guidelines have been set forth by the Alquist-Priolo Earthquake Fault Zoning Act of 1972 , the California Board for Geologists and Geophysicists, the California Mining and Geology Board, the California Geological Survey (CGS), formerly known as the California Division of Mines and Geology (CDMG), and various professional organizations like the Association of Engineering Geologists (AEG). Local jurisdictions (cities and counties) have no authority to disregard these laws, requirements and guidelines although they may enforce more strict requirements.

IV. THE PEER REVIEW PROCESS

Peer review is a process that compares a scientific work product to the laws, requirements and guidelines which govern the work in question. The reviewer must not have a bias for or against the particular project in question and its consultants. Opinions concerning the adequacy of the work product being reviewed must be based solely on a comparison of the work product to the governing laws, requirements and guidelines (See References 6 and 10).

Although Sonoma County does not generally require peer review before granting permits to projects on sites in unincorporated areas, counties and cities throughout California have required peer review of geologic reports written to guide proposed

construction projects as an essential component of their permitting process since the 1960s.

Having been previously cited for unlicensed practice of geology for failure to properly conduct peer review, PRMD obtained the services of Kleinfelder to review the updated RGH report (Reference 8). Kleinfelder is a geotechnical consulting firm with an office in Santa Rosa, Sonoma County, California.

Because Kelinfelder performs geotechnical consulting in Sonoma County, retaining Kleinfelder to perform this peer review is improper under the guidelines of the California Mining and Geology Board. In *General Guidelines For Reviewing Geological Reports* dated May 9, 1996 (Reference 10), the California Mining and Geology Board states "A different type of conflict commonly exists in a jurisdiction where the geologic review is performed by a consulting geologist who is also practicing commercially (performing geological investigations) within the same jurisdictional area. Such situations should be avoided, if at all possible". This potential conflict of interest in itself, as called out in Reference 10, should invalidate the Kleinfelder review. There are also serious omissions in the Kleinfelder review that are explained in the Conclusions section of this report. In the Conclusions section, Kleinfelder's failure to follow the requirements of the California Geologist and Geophysicist Act and the California Division of Mines and Geology (Now called California Geological Survey) is documented by presenting quotations from the governing regulations. These omissions by Kleinfelder are in addition to the fact that Kleinfelder is in violation of guidelines of the California Mining and Geology Board in performing the review in the first place.

My review of the updated geologic report by RGH in support of the project (Reference 8) consisted solely of determining whether or not the stability of the site has been demonstrated and whether the potential impacts of the proposed project have been evaluated in accordance with State laws and standards of care that govern the practice of geology in the State of California.

V. REGIONAL GEOLOGIC SETTING

According to the geologic map in Reference 1, the site vicinity is traversed by a thrust fault known as the Maacama fault. This geologic map has been prepared at a scale of 1 inch = 1 mile, and is therefore approximate and is not intended nor suitable for site specific application. In the site vicinity, the Maacama fault juxtaposes bedrock of the Sonoma Volcanic Group south of the fault against bedrock of the Franciscan Assemblage north of the fault.

The Landslide Map in Reference 1 shows a large landslide in the natural slope immediately downslope from the proposed wine factory. My site reconnaissance noted topographic features (Lobate masses with a hummocky ground surface), in the

area of the proposed wine factory, that are highly suggestive of landsliding. This is the area shown as a landslide in Reference 1. My examination of stereo pairs of aerial photographs (Reference 3) in the Sonoma County Assessor's office also indicated the presence of this landslide mass. It appears to me that this may be two individual landslides and it appears to me that the landslide(s) may extend farther upslope towards Wappo Road than shown on the Landslide Map in Reference 1. A portion of this landslide immediately below the residence at 245 Wappo Road experienced movement in 2005, and is therefore considered active. My interpretation of this landslide complex is shown on Plate 1 of this report.

In any event, my field observations and aerial photograph interpretation of landsliding are in very close agreement with the landslide interpretation in Reference 1.

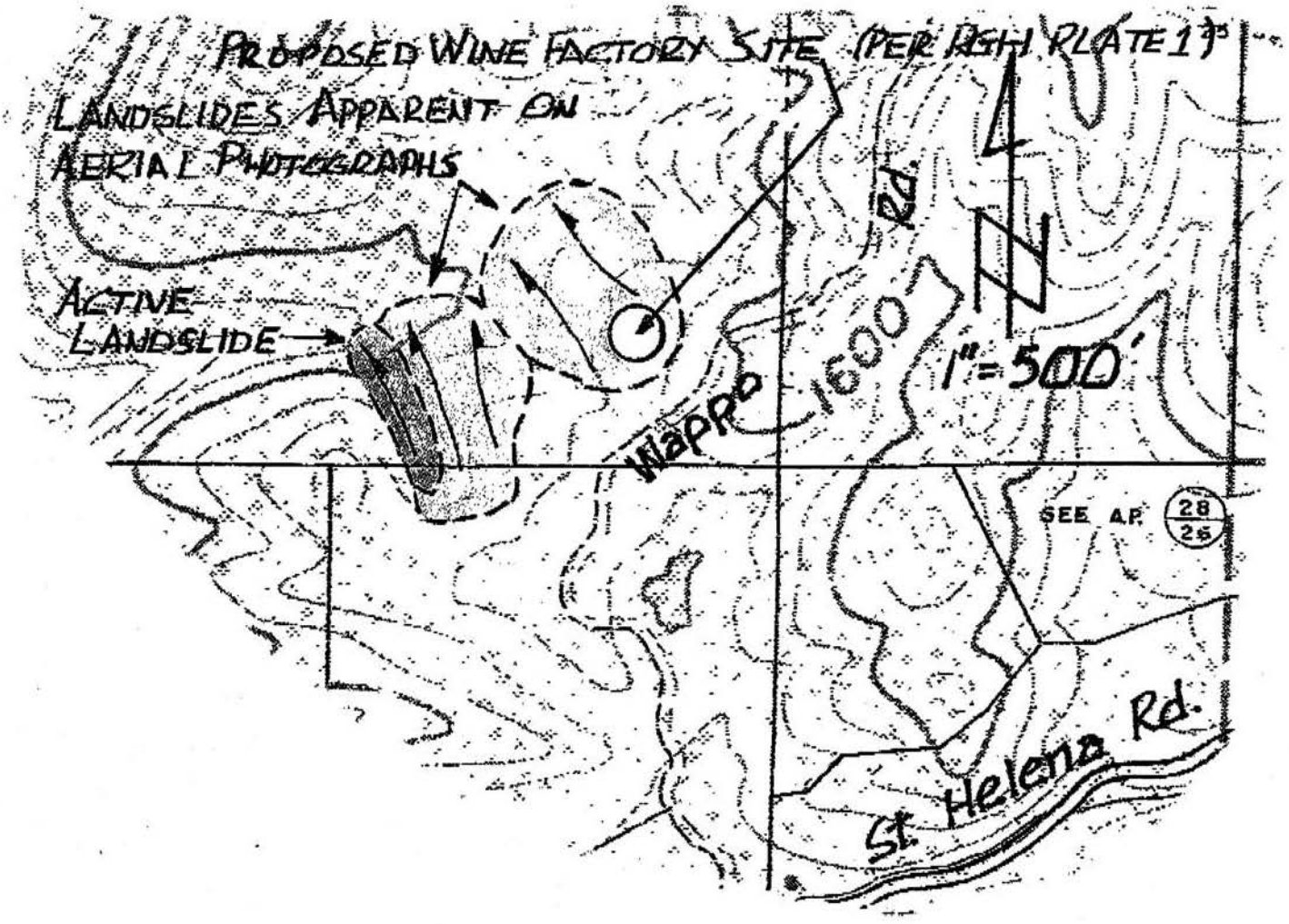

Plate 1. APPARENT LANDSLIDE SETTING

Reference 2 indicates that the proposed wine factory is within an area where "Principal predicted debris-flow source areas" are mapped. This map has also been prepared at a small scale (1 inch = 2 miles), and is therefore also approximate and is not intended nor suitable for site specific application.

Examination of these regional geologic, landslide and debris flow hazard maps and stereo pairs of aerial photographs (References 1-3) indicate that the proposed project is in a region characterized by steep slopes, weak bedrock and abundant landslides and debris flows. In fact, as stated above, approximately 2 years ago a landslide was active immediately below the residence at 245 Wappo Road (the same address as the proposed wine factory). The toe of the active landslide is in an unnamed tributary to Mark West Creek and the top of the landslide is close to the residence.

It appears that the active landslide below the house at 245 Wappo Road formed below a septic drain field. Features visible on the ground surface and on aerial photographs indicate that this active landslide may be a reactivation of a portion of a larger landslide that exists in the slope below the house and drain field at the same address as the proposed wine factory.

This active landlside that now threatens the house above and the creek below is a reminder that any change in the moisture conditions in a marginally stable slope can trigger landsliding. Moisture increases can result from installation of drain fields, improper grading and drainage design, defoliation or any combination of these factors.

Plate 2, 245 Wappo Road Residence Landslide, view from above.

Plate 3, 245 Wappo Road Residence Landslide, view from below. Note residence in photo at top of landslide. Plates 1 and 2 courtesy of California Regional Water Quality Control Board, North Coast Region

The disregard for geologic stability of the proposed wine factory site could easily have the same disasterous results there as it did at the 245 Wappo Road residence site.

Debris from this landslide entered a tributary to Mark West Creek and had a very noticeable detrimental effect on water quality in both the tributary and Mark West Creek itself. Furthermore, this active landslide demonstrates the instability of slopes in the site vicinity. Both published geologic and landslide data (Reference 1) and a site investigation by The Geoservices Group (Reference 7) indicate that landslides are present in the immediate vicinity of the proposed wine factory, if not directly within the building footprint. This means that <u>any</u> change in use, including grading and/or building construction has the potential to reactivate existing landslides and/or trigger the formation of new landslides.

It is the task of the consulting Engineering Geologist and Geotechnical Engineer to ensure that this does not happen by fully evaluating the stability characteristics of the proposed grading and construction site. Because the County review of the project has

Ms. Kimberly Burr, Esquire:
P.O. Box1246
Forestville CA 95436

9 November 2008

Dear Ms. Burr:

Here is my declaration in relation to the proposed Henry Cornell Winery negative declaration.

Qualifications

I am Stacy K. Li, Ph.D. and have recently retired from the National Marine Fisheries Service (NMFS), where I served as a salmon and steelhead ecologist, an Instream Flow Specialist and the Water Rights Specialist for the Habitat Conservation Division of the South West Region from 12 February 2001 to 30 September 2008. I also served briefly as the Enforcement Biologist for the South West Region of the Office of Law Enforcement, National Marine Fisheries Service. I was the first and thus far the only Enforcement Biologist for the Office of Law Enforcement. I was awarded a NOAA Bronze Medal for superior federal service in April 2008 for a section 9 (Take under the Endangered Species Act) investigation involving timber harvest rules for a timberland conversion to vineyard, resulting sedimentation, and take of steelhead in Mendocino County.

Previous to federal service, I ran my own consulting business, Aquatic Systems Research, from 1989 to 2001. I was the California Department of Fish and Game's expert witness on instream flow flows for tributaries to Mono Lake in the historic State Water Resources Control Board Hearing on Mono Lake in the early 1990s and was part of the Mono Basin Streams Restoration Team. Prior to forming my own consulting firm, I worked for a number of environmental consulting firms, Beak Consultants (Sacramento), Holton Associates (Berkeley), EIP Associates (San Francisco), and D. W. Kelley and Associates (Newcastle). I began my professional biological career in 1980.

In addition to my experience as a biologist, I also participated in applied planning. I served as the Chairman of the Loomis Planning Commission in Placer County. The town's first general plan was created when I was chairman. I also helped develop storm water management guidelines for Placer County and participated on the Loomis general plan update committee.

I was educated at the University of California at Davis where I earned a Ph.D. in 1976 for work emphasizing animal behavior, ecology and evolution, a M.A. in 1971 in psychobiology, a B.A. in 1969 in psychology and a B.S. in 1968 in zoology.

Proposed Negative Declaration

I have read Sonoma County Planning Department's proposed negative declaration, dated September 2008, for the Henry Cornell Winery, located at 245 Wappo Road in Santa

Rosa, File Number UPE07-008 and have first hand knowledge of upper Mark West Creek where this project is proposed having visited twice as an employee of NMFS. In that proposed negative declaration, potential project related adverse effects to biological resources were not checked. Therefore, the proposed negative declaration is inadequate because I have observed severe adverse impacts from deposited sediments from the Cornell property that has adversely affected federally threatened steelhead trout (*Oncorhynchus mykiss*) and their habitat in Mark West Creek.

I understand from North Coast Regional Water Quality Control Board (NCRWQCB) inspection reports and conversations with neighbors that a substantial pile of fill material from the Cornell property was pushed into a low lying area near North Fork (NF) Mark West Creek in order to repair a landslide. The stored fill material resulting from the landslide entered the NF Mark West Creek and then into Mark West Creek during the winter of 2005-2006. Mr. Paul Keiran, NCRWCB, estimated the sediment volume from the Cornell property at 10,000 cubic yards.

Because I have inspected Mark West Creek when I worked for NMFS on at least two previous occasions prior to the sediment spill reaching the Caplinger property, I saw more clearly the adverse effects to steelhead trout and steelhead habitat from this large volume of sediment spill. I have reviewed pictures of the sediment spill taken by local residents and Mr. Keiran. The turbidity of the water appears to be sufficiently high to kill steelhead if steelhead were exposed to it for a day. The sediment from this release could be detected by its size composition (small gravel and finer) and its color (brownish) for over 4,000 lineal feet downstream of NF Mark West Creek in Mark West Creek a during habitat inventory survey that I conducted on 20, 21, and 30 October 2008.

The Cornell property is evidently prone to landslides. I do not recommend any activity that would tend to make these slides active. Upslope development will inevitably result in some loss of soil. Best management Practices are imperfect at best and do not eliminate soil loss or sediment deposition.

Description of Affected Reach of Mark West Creek

The reach of Mark West Creek from the Tarwater Bridge upstream to its confluence NF Mark West Creek consists mostly of a consistent gradient (approximately four percent) stream flowing though a narrow bedrock confined canyon. Long and deep pools occur at periodic nick points, but they are not many. Within the steeper segments of the stream are many small step pools and step pocket pools with steep cascades in between these juvenile rearing areas. On one hand, these rearing areas are more sensitive to degradation by sedimentation because of their small size they are easily filled. On the other hand, sediment travels through these habitat types more quickly because they are small and within steeper portions of the stream. Stream banks and tributaries other than NF Mark West Creek show little evidence of contributing substantial amounts of sediment to the stream. Riparian canopy and topographic shade were extensive.

Adverse Effects of Sedimentation from the Cornell Landslide on Mark West Creek

The adverse effects of sedimentation are so well known that monographs have been written on the subject (see Waters 1995[1]).

- The large pools downstream of NF Mark West Creek were filled in with sediment, some to more than ½ to ¾ of their original volume, reducing living space and escape cover, degrading holding and rearing habitat for steelhead trout. Some pool depths were reduced from over eight feet to less than two feet. Smaller step pools and step pocket pools within steeper slopes of the stream were also filled or buried with sediment, reducing juvenile steelhead rearing habitat. Low gradient riffles were generally were so clogged with sediment that the space between the dominant bed elements were filled. This embedded condition greatly reduces benthic aquatic invertebrate production, which is used as food by steelhead.

- Steelhead spawning has been adversely affected by the sediment spill. Finer gravels of the Cornell sediment release that are ill suited for steelhead spawning have buried spawning gravel. The appropriate spawning material is hidden and unavailable. The smaller material from the Cornell sediment spill is easily scoured away by modest flows and would have reduced percolation through the redd's (fish nest) egg pocket.

- Deposits of sediment from the Cornell property have interrupted surface flow in four places of Mark West Creek to fragment steelhead habitat, interrupt fish food delivery, and create upstream and downstream fish passage barriers.

- I saw five adult steelhead stranded in Mark West Creek since June 2008. I find the number of stranded adults to be unusually high. Could the effects of the sediment spill or water diversion delay the adults and trap them in the stream?

- I also located an adult steelhead skeleton lying on the bank near the pool where three adult steelhead were stranded. There is a lack of space in the large pools for effective escape from predators since the sediment spill.

Based on my observations of the condition of Mark West Creek in this reach prior to the sediment spill, the current state of the same reach degraded by the massive sediment plume, and my 28 years of professional experience assessing salmonid habitat and salmonids populations in California, Oregon, and Washington, the observed cumulative adverse habitat conditions on steelhead in the affected reach of the stream could easily reduce steelhead production in Mark West Creek by at least an order of magnitude.

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[1] Waters, Thomas F. 1995. Sediment in Streams – Sources, Biological Effects and Control. American Fisheries Society Monograph 7, Bethesda, Maryland: 251 pp.

Streamflow as a Limiting Factor

Streamflow in Mark West Creek in late October 2008 was very low, on the order of 0.01 cubic feet per second (cfs). This is about the same volume as the full flow from a garden hose. Water diversion under these very low flow conditions could easily drain the stream. Water diversion purposes such as frost protection or heat control would be particularly debilitating because water need for these conditions is on a regional rather than an individual basis, so water demand is large and simultaneous.
The 2008 frost protection season was the worst in recent history. There were at least two incidences where frost protection diversions killed federally listed species. In one case endangered coho salmon were killed because the small creek where they lived was sucked dry. Some pools in this small creek were three feet deep. The other incident occurred not in a small stream, but the mainstem of the Russian River. Close to 37% of the Russian River's flow as measured at the Hopland USGS gage was directly diverted and used for frost protection. That volume of diversion was sufficient to expose a gravel bar in the mainstem Russian River and kill recently emerged and threatened steelhead fry living there.

Groundwater extraction as occurring and proposed can also reduce streamflow in streams. Streams with low base flows such as Mark West Creek would be particularly susceptible. The adverse effects are delayed because water percolation underground takes more time to show its effects, but groundwater is part of the hydrologic cycle.

Endangered Species Status

Steelhead trout inhabit Mark West Creek. These fish are part of the Central California Coast Steelhead Distinct Population Segment that was listed as a threatened species under the U.S. Endangered Species Act (ESA) on August 18, 1997; the threatened status was reaffirmed on January 5, 2006 (71FR834). This Steelhead DPS includes all naturally spawned anadromous *Oncorhynchus. mykiss* (steelhead) populations below natural and manmade impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Tributary streams to Suisun Marsh including Suisun Creek, Green Valley Creek, and an unnamed tributary to Cordelia Slough (commonly referred to as Red Top Creek), excluding the Sacramento-San Joaquin River Basin, as well as two artificial propagation programs: the Don Clausen Fish Hatchery, and Kingfisher Flat Hatchery/ Scott Creek (Monterey Bay Salmon and Trout Project) steelhead hatchery programs.

A final designation of Critical Habitat was published on September 2, 2005 with an effective date of January 2, 2006 (70FR52488) and final revised protective regulations (4d rules) were issued for this DPS on June 28, 2005 (70FR37160).

The sediment deposit from the Cornell property is massive and will remain in the stream and continue to degrade steelhead habitat until sufficiently large flows can cleanse the Mark West stream channel. Until that time, steelhead production in Mark West Creek

will remain low. The sediment deposits have degraded all facets of steelhead life history from upstream adult passage impediments, reduction of available spawning gravels, reduced quality of spawning sites, reduced porosity in the interstitial embryo environments, reduced alevin (fry) emergence from the gravel from sediment clogged interstitial space, diminished rearing habitat quantity and quality, downstream migration barriers to both juveniles and adults, and increased incidence of adult stranding. Before any further development is permitted in this area this property, streamflow should be studied and restored, sediments removed naturally and anthropogenic sediment inputs eliminated.

LAST

Without regard for the adverse impacts from further development, the culvert on NF Mark West Creek and under Saint Helena Road is inadequate. It is undersized and has backwatered during high flows. If the backwater lasts sufficiently for the roadbed to become saturated the road will fail and send additional sediment to Mark West Creek. In addition, the culvert is also not at grade with the stream, and is therefore a fish passage impediment. Replacement of the culvert would be a project related mitigation. National Marine Fisheries Service has guidelines for culvert replacement.

I, Stacy K. Li, Ph.D., declare the above statements to be true.

Stacy K. Li
Signature

12 Nov 08
Date

Citations

Waters, Thomas F. 1995. Sediment in Streams – sources, biological effects and control. American Fisheries Society Monograph 7, Bethesda, Maryland: 251 pp.

KIMBERLY BURR
Attorney at Law
Post Office Box 1246 Forestville, CA 95436

707.887.7433 • 707.887.0847 facsimile

TO: Dave Hardy
PRMD

FROM: Kimberly Burr

DATE: 11-12-08

RE: Henry Cornell Winery Mitigated Negative Declaration; UPE07-0008; formerly UPE 03-0092; Public comment

The accompanying comments of Dr. Stacy Li are made in reference to the above entitled mitigated negative declaration to be considered by the Board of Zoning Adjustments tomorrow November 13, 2008. Please make these comments a part of the administrative record and distribute to the Board prior to the hearing.

Thank you, Kimberly Burr KC

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November 12, 2008

Ms. Kimberly Burr, Esquire
P.O. Box 1246
Forestville, CA 95436

Subject:: Technical Review of Henry Cornell Winery, 245 Wappo Road, Santa Rosa, CA
APN 028-260-041

Dear Ms. Burr:

I am a hydrologist with over twenty years of technical and consulting experience in the fields of geology and hydrology. I have a Master's of Science degree in Geology received from Miami University (Oxford, Ohio) in 1989 and I am a California Professional Geologist and Certified Hydrogeologist. I have been providing professional hydrology services in California since 1991 and routinely manage projects in the areas of surface- and groundwater hydrology, water supply, water quality assessments, water resources management, and geomorphology. Most of my work is located in the Coast Range watersheds of California, including the Northern San Francisco Bay Counties. My areas of expertise include: characterizing and modeling watershed-scale hydrologic and geomorphic processes; evaluating surface- and ground-water resources/quality and their interaction; assessing hydrologic, geomorphic, and water quality responses to land-use changes in watersheds and causes of stream channel instability; and designing and implementing field investigations characterizing surface and subsurface hydrologic and water quality conditions. I also teach an annual course on hydrology and geomorphology through the University of California Extension (Berkeley) and provide technical presentations and lectures to public/community and non-profit groups. I co-own and manage the hydrology and engineering consulting firm Kamman Hydrology & Engineering, Inc. in San Rafael, California (established in 1997).

I have reviewed the project's Mitigated Negative Declaration (Declaration) dated November 13, 2008 and many of the County staff reports, supporting technical reports and correspondence regarding the surface water and groundwater hydrology conditions at the project site. The focus of my review was to provide a technical assessment on the potential project-induced impacts on water resources and whether the Declaration and supporting materials adequately assess potential impacts. I also reviewed a number of additional hydrologic and meteorologic data sets, reports, and maps to substantiate the assumptions and values I use to evaluate potential impacts to water resources by project proponents.

Based on my review and technical experience within Sonoma County and the Northern San Francisco Bay area, it is my opinion that the Declaration does not fully or correctly characterize and quantify potential project-induced impacts to water resources and the project still poses potential adverse impacts to these and related resources. The rationale supporting my opinions are discussed in the following sections.

1.0 Uncharacterized Groundwater Aquifer Conditions

The project proponents have not adequately evaluated or ruled out the potential for adverse impacts on local groundwater and surface water resources due to proposed groundwater extractions from the Cornell wells or the combined effect of groundwater extractions from other vineyards and development planned on neighboring parcels. As described in the 2006 Todd report, the Cornell site is underlain by a variety of geologic formations, primarily the Franciscan Complex and Sonoma Volcanics. These deposits consist of a variety of rock types, including lava flows and ash deposits of varying composition, degree of cementation, fracture porosity and permeability. A geologic fault trending NE-SW also occurs within or immediately adjacent to the site, contributing to the complex juxtaposition of geologic units. These rocks are arranged in a complex fashion – any given unit may lack wide aerial continuity, lack consistent depth and some units may have lenticular geometry or have interfingering contacts with differing adjacent rock types. The primary permeability hosting groundwater movement through these rocks results from fractures in the relatively impermeable rock matrix. The complex transitions/boundaries between rock types also likely result in heterogenous water flow patterns through and between rock types.

Based on my experience in conducting hydrologic investigations at sites underlain by the Franciscan Complex and Sonoma Volcanics and published accounts of groundwater flow conditions in these rocks by others (USGS, 2003; Slade & Associates, 2001a and 2001b; Lamphier-Gregory, 2003), it is my opinion that the groundwater flow conditions (i.e., rates of flow, patterns of flow, contributing aquifer storage capacity) have not been sufficiently characterized at the Cornell site to make any definitive statements as to whether the project will or will not adversely impact surrounding wells, seeps, springs, or other consumptive users.

One concern I have regarding the proponents characterization of groundwater conditions is that the simplified and empirically-derived analytical relationships that were used to calculate aquifer transmissivity and storativity (see pages 11 and 12; Todd, 2006) are premised on a long-list of governing assumptions, which are compromised, if not entirely invalidated, when applied to a non-homogeneous aquifer of limited lateral dimensions and not displaying similar hydraulic properties in all directions (e.g., bedrock fracture-dominated and many volcanic-derived aquifer systems). It is not unreasonable to expect that the zone of influence from a pumping well in a fractured bedrock aquifer, with preferred flow directions possibly influenced and enhanced by the alignment of a contributing fault zone, would extend for notable distances beyond what would be estimated for a homogeneous and laterally extensive aquifer. Because of this possibility and the fact that the local fault bisects both the North and South Watershed Creeks, it is not unreasonable to assume that there is a direct connection between the groundwater system underlying the project site and adjacent creeks.

As described above, aquifers within the Franciscan Complex and Sonoma Volcanics are typically heterogeneous in nature. The best and most appropriate method for determining groundwater flow and storage characteristics in fractured bedrock aquifers like those that exist under the Cornell site is to perform an aquifer test, where a well is pumped in a controlled fashion for an extended period and adjacent wells and water bodies (e.g., Mark West Creek) are monitored for a response (Driscoll, 1986). The California DWR also specifically recommends

an aquifer (pump) test as part of the Cornell project impact assessment and further describe the procedure (DWR, 2005). If performed correctly, an aquifer pumping test can quantify the optimum well pumping rate from the aquifer as well as a storage estimate for the aquifer and radius of influence - parameters that are needed to determine the safe yield from an aquifer and potential impacts on the surrounding users and environment. Therefore, it is my opinion that an aquifer pump test is required to adequately evaluate potential impacts from Cornell groundwater withdrawls on local area water resources, and in turn, ecological conditions sustained by dry-season, groundwater-fed baseflow in the Northern and Southern drainage area creeks.

2.0 Inadequate Impact Evaluation on Mark West Creek

The project proponents evaluation of potential project impacts on Mark West Creek is misleading and inappropriate in that it does not address the watershed within, adjacent to, or even within approximately 17 river miles of the project. The amount of consumptive water use by the winery (estimated at about 2.0-AFY) has been compared to creek flows measured and estimated for a USGS stream gauge located at Highway 101 or approximately 17-miles downstream of the project site. No evaluation of potential impacts to creek flows and ecological conditions within the North and South Watersheds was completed nor the mainstem creek reach immediately downstream of the North and South Watersheds. Any impacts to water resources and the environment associated with the project will be greatest and most significant within and immediately adjacent to the site - not a location 17-miles downstream and having an intervening drainage area of approximately 40-square miles. Thus, the contention that project water usage is a small percentage of Mark West Creek flow is misleading and inaccurate conclusion.

I've reviewed available USGS stream flow records for gauged watersheds to the Russian River which display similar rainfall and runoff characteristics to the North and South Watersheds. I've also reviewed CDFG Stream Survey reports for the summers of 1965, 1969, 1979 and 1996. In addition, I completed a field reconnaissance on November 10, 2008 and observed dry conditions on the lower North Watershed creek and very low flows on the South Watershed creek adjacent to project parcels. Based on these data and observations, flows in the North Watershed creek typically go dry by late summer and very low summer perennial flows (0.6 to 2-cubic feet per second [cfs]) are maintained in the lower portion of the South Watershed creek and mainstem below the confluence of the North and South Watersheds. These flows are significantly lower than the Mark West Creek flows (dry year flow of 17,600 AFY [equivalent dry year flow rate of 24.3 cfs] and average water year-type flow of 42,671-AFY [equivalent average year flow rate of 58.9 cfs]) used by project proponents to evaluate project-induced impacts on Mark West Creek. It is also important to point out that dry-season baseflows in the North and South Watershed creeks are sustained by groundwater contributions and groundwater pumping during the summer and fall months will have the potential to significantly impact (i.e. reduce) creek baseflows that support aquatic organisms and riparian vegetation.

Using data provided in Todd's 2006 report, I've estimated the groundwater pumping rates for the overlapping the 45-day crush/processing period and 120-day irrigation season. When both of these activities are occurring under the Phase 1 project conditions, I estimate average groundwater pumping rates to be 7.7 gpm, increasing to 8.4 gpm under Phase 2 project conditions. Todd (2006) reports maximum groundwater pumping rates of 15 gpm are possible during this period. These pumping rates are not small or insignificant in comparison to dry

season creek flow, but actually reflect a relatively large, if not entire (100%), percentage of the dry season creek flow. Thus, the potential certainly does exist for the Cornell project to impart significantly adverse reductions in creek summer base flow and, in turn, impacts to creek ecology within and downstream of the confluence of the North and South Watersheds.

3.0 Incorrect Water Budget Assessment

The quantification of potential adverse project impacts on water resources by the project proponents relies substantially on the water budget prepared by Todd (2006). It is my opinion that this water budget is flawed and the estimates on several water demand variables are significantly underestimated as described below. This results in overestimates of water availability for groundwater recharge and storage, leading to inaccurate conclusions (i.e., reduced threat) regarding potentially significant impacts. I also call into question two other items: 1) the estimate for project return flows, equal to approximately 2 AFY, a value that is unsubstantiated; and 2) the estimated water demand for bottling 10,000 and 20,000 cases of wine.

3.1 Unsubstantiated Return Flows

On pages 19 and 20 of the 2006 Todd report, an irrigation and septic tank return flow of 1.99 AFY is stated as a source of water inflow to the project water budget. This value is 50% of stated total groundwater demands for the project. There is no explanation of how this value was derived or justified. Assuming that the majority of this return flow is irrigation return flow, this value reflects a very poor irrigation efficiency. A notable reduction in project groundwater demand and potential stress on limited water resources could be realized by introducing better water conservation practices through improved irrigation efficiency. This would reduce the potential for project-induced impacts.

3.2 Bottling Water Demand

The proposed project indicates that it will support 20-acres of vineyard. Using data supplied in the April 13, 2008 Sonoma County Fact Sheet (www.SonomaCounty.com/media/press-releases/), a 20-acre vineyard will produce approximately 6600 cases on wine (3958 bottles per acre; 12 bottles per case). It is unclear why the project water demand is based on 10,000 and 20,000-cases of wine for Phase 1 and Phase 2, respectively. Unless the Cornell winery is anticipating importing additional grapes for production, the project could reduce groundwater pumping demands and potential impacts to local water resources if it only needs to process 20 acres of vineyard.

3.3 Evapotranspiration

The estimated water budget losses by evapotranspiration (ET) are significantly underestimated. In essence, Todd (2006) assumes that because monthly rainfall rates are greater than evapotranspiration rates during the months of October through March, they can discount water losses due to evapotranspiration during this period. This results in reducing an initial annual ET demand of 42.29-inches by 10.47 inches, yielding an annual ET total of 31.82. This assumption is incorrect because the process of evapotranspiration continues year-round including October through March. Todd's (2006) Figure 13 indicates that ET occurs during these periods. This error in the ET water demand overestimates the amount of water available to surface water runoff and groundwater recharge in the project Watersheds.

3.4 Stream Flow

Annual stream runoff estimates for the North and South Watersheds are stated to be 34-percent of annual rainfall while the runoff 17-miles downstream at the former USGS Highway 101 stream gauge is estimated at 50-percent of the annual rainfall. It is my opinion that the estimated annual runoff for the North and South Watersheds are significantly underestimated for the following reasons. First, a typical runoff phenomenon experienced in Northern California watersheds is that there is an increase in the runoff volume per unit area as one moves upstream or towards the headwater reaches. This pattern is reversed in Todd's estimates of runoff between the project and former USGS gauge drainage areas. The principal reason for the increase in runoff per unit area in the upstream direction is associated with increasing average slope of the contributing drainage area – increased slope promotes faster and increased runoff.

Another reason I feel the runoff volumes from the North and South Watersheds are underestimated comes from review of available annual rainfall and runoff figures for drainage areas within the Russian River basin as published by Rantz (1974) of the USGS (see Table 1, attached). This report indicates that with the exception of one basin, runoff from Russian River watersheds range from 41- to 74-percent of mean annual rainfall and from 51- to 63- percent of mean annual rainfall from headwater drainages similar in elevation, slope and meteorology to the North and South Watersheds (e.g., Big Sulphur, Dry and Mill Creeks). Based on these data, I estimate the annual creek runoff from the North and South Watershed to be around 55- to 60-percent of the mean annual rainfall. Similar to the inaccurate ET estimate, the low surface water runoff values used in the water budget lead to overestimates in the amount of water available to groundwater recharge and inaccurate conclusions (i.e., reduced threat) regarding potentially significant impacts.

4.0 Incomplete Analysis of Cumulative Impacts

The project proponents have not completed a full evaluation of the cumulative project impacts on water resources. An accurate existing conditions water budget has not yet been created; one that includes the water demands of the adjacent Pride Winery, located east of the Cornell project site and any other existing residential and agricultural entities within the North and South Watersheds. Only after all cumulative existing demands are incorporated into the existing water budget can an accurate assessment of Cornell project conditions be completed. Incorporating the demands and water withdrawals associated with the Pride Winery (e.g., vineyard irrigation demands for approximately 60-acres of vineyard as measured off of aerial images), will incorporate an estimated 10-AFY of additional irrigation demands not currently captured in the project impact assessment.

5.0 Groundwater Basin Overdraft

In order to better evaluate the current overdraft condition of the groundwater basin, the water budget will need to be revised and recalculated to incorporate more realistic ET and stream runoff variables. It will also need to incorporate demands and influences from the Pride Winery and other residents and agricultural operations within the affected watershed. It is our understanding that water is being trucked up to the Pride Winery alluding that the existing Pride wells and other supplies are currently insufficient to meet their existing needs. The degree to

which this is associated with dry water year-type conditions or excessive demands should be assessed.

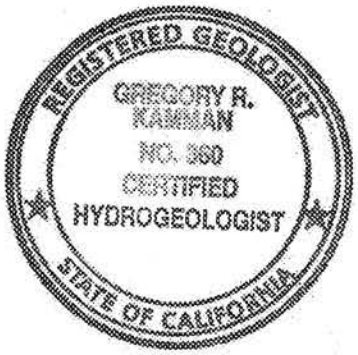
It's my sense that updating the water budget with more accurate ET and runoff estimates will lead to significantly greater cumulative water outflows than previously estimated. This will lead to significantly less water available to groundwater recharge, altering the relative proportion of project withdrawals to recharge and posing a greater potential project impact on groundwater resources. In addition to a refined water budget, a better estimate of aquifer storage will be needed to responsibly assess the state of groundwater overdraft within the basin. The only accurate method for determining the true aquifer storage is through completion of the aquifer test discussed under Section 1.0 above. These are all important and necessary analyses required to accurately evaluate if these potential impacts are significant or not.

In closing, its my opinion that the potential impacts to water resources in the North and South Watersheds have not been adequately assessed and there is a real potential for project-induced adverse impacts to water and other resources. Until these potential impacts are assessed, I recommend that the Sonoma County Permit and Resource Management Department reconsider authorizing a Mitigated Negative Declaration on the Cornell Winery project. At the very least, the County should require that the Cornell project proponents address the water resource assessment deficiencies outline in this letter prior to authorizing the project to proceed.

If you have any questions or concerns, please call me.

Sincerely,

Greg Kamman, P.G., R.HG.
Principal Hydrologist



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DWR, 2005, Comment letter from Christopher Bonds, P.G., C.HG., Senior Engineering Geologist, California Department of Water Resources to Ms. Lainey Gerber, Clerk of the Board of Supervisors, re: Henery Cornell Winery and Groundwater resources, PRMD File No. 03-0092.

Lamphier-Gregory, 2003, Initial Study and Final Mitigated Negative Declaration, Application Number 99-492, Suscol Springs North Vineyard Conversion Project. February.

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Todd, 2007, Memorandum to Mr. Jon Tracy, R.E.H.S., County of Sonoma PRMD, June 12, From David W. Abbot, 5p.

USGS, 2003, Ground-water resources in the Lower Milliken-Sarco-Tulucay Creeks area, Southeastern Napa County, California, 2000-2002. U.S. Geological Survey (Water-Resources Investigations Report 03-4229).

Russian River Basin	Drainage Area (mi2)	Mean Annual Precipitation (inches)	Mean Annual Runoff (inches)	Runoff / Precip (%)
Russian River drainage between gages near Cloverdale and near Healdsburg, but excluding gaged areas of Big Sulphur Creek, Maacama Creek, and Franz Creek	148.6	40	15.3	38
Russian River drainage between gages near Healdsburg and near Guerneville, but excluding gaged areas of Dry Creek, Mill Creek, and Santa Rosa Creek	361	35	18	51
Cummisky Creek near Cloverdale	13.4	39	22.2	57
Big Sulphur Creek near Cloverdale	82.3	48	30.1	63
Maacama Creek near Kellogg	43.4	58	23.7	41
Franz Creek near Kellogg	15.7	40	18.9	47
Dry Creek near Cloverdale	87.8	47	24.1	51
Warm Spring Creek at Skaggs Springs	32.7	50	30.5	61
Dry Creek drainage between gages near Cloverdale and near Geyserville, but excluding gaged area of Warm Spring Creek	41.5	46	23.4	51
Mill Creek near Healdsburg	11.5	50	26.6	53
Santa Rosa Creek near Santa Rosa	12.5	36	18.7	52
Big Austin Creek at Cazadero	26.6	65	47.8	74
Austin Creek near Cazadero, but excluding gaged area of Big Austin Creek	36.5	59	32	54

Table 1. Mean annual precipitation and runoff for watersheds to the Russian River (Rantz, 1974).

TRANSMISSION VERIFICATION REPORT

TIME : 11/13/2008 08:17
NAME : KIMBERLY BURR
FAX : 7078870847
TEL : 7078877433
SER.# : 000E5J924396

DATE,TIME	11/13 08:15
FAX NO./NAME	5658343
DURATION	00:01:30
PAGE(S)	09
RESULT	OK
MODE	STANDARD ECM

KIMBERLY BURR
Attorney at Law
Post Office Box 1246 Forestville, CA 95436

707.887.7433 • 707.887.0847 facsimile

TO: Dave Hardy
PRMD
FAX 707-565-8343

FROM: Kimberly Burr

DATE: 11-13-08

RE: Henry Cornell Winery Mitigated Negative Declaration; UPE07-0008; formerly UPE 03-0092; Public comment

The accompanying comments of Greg Kamman, P.E. CHg are made in reference to the above entitled mitigated negative declaration to be considered by the Board of Zoning Adjustments today November 13, 2008. Please make these comments a part of the administrative record and distribute to the Board prior to the hearing.

Thank you, Kimberly Burr 1C.

State of California – The Resources Agency
ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov

POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500

November 24, 2008

Board of Zoning Adjustments
County of Sonoma
Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Dear Members:

Subject: Cornell Winery, SCH #2008102040, Mitigated Negative Declaration, City of Santa Rosa, Sonoma County

The Department of Fish and Game (DFG) has reviewed the above referenced document. The Mitigated Negative Declaration (MND) represents the County of Sonoma's (County) environmental review of the applicant's request for a winery with a maximum annual production capacity of 10,000 cases. The proposal includes construction of an 18,670 square foot building and an 8,670 square foot cave for barrel storage. The project would require a substantial amount of grading (approximately 3,000 cubic yards) to terrace the site for the proposed buildings. The plans indicate space for approximately 22 parking spaces. A new water tank would be constructed for fire protection and domestic use. The building and caves would contain all winery operations and equipment. A 540 square foot kitchen is proposed in the 2,640 square foot hospitality area of the winery. The existing wells on the ridge to the northeast will supply the winery with water.

The 40-acre winery parcel is located on a private road, known as Wappo Road, off St. Helena Road, northeast of the City of Santa Rosa. Topography varies over the 40 acres, although the majority of the site is fairly steep with slopes up to 30 percent. The project parcel consists of oak and pine woodlands and open grasslands, although the building site is proposed to be located on two knolls bounded by ravines. The closest watercourse is an intermittent stream approximately 640 feet away, sometimes referred to as the North Fork of Mark West Creek tributary to Mark West Creek through a culvert under St. Helena Road. DFG has documented that the North Fork of Mark West Creek supports a run of Central Coast steelhead, a federally threatened species and may potentially support Central Coast coho salmon, a State and Federal endangered species. DFG has documented coho salmon in the mainstem Mark West Creek, downstream of the project site. 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.

The MND and supporting documents state that the project requires about four acre feet per year (AFY) of water and return flows to the aquifer are about two AFY; therefore, the net usage or loss of base flow contribution is about two AFY. The MND estimates Mark West Creek has an average annual flow of 42,671 AFY and a dry year flow of 17,600 AFY; therefore, the net loss of two AFY is likely insignificant. The County should be advised that in coastal rivers and streams the majority, if not all, of the average annual flow in a watershed occurs during a relatively short period of time (i.e., December to March). Very little of the average annual flow occurs during the summer months when juvenile salmonids, fish, aquatic invertebrates and other fish and wildlife resources are most vulnerable to reductions in cool water from base flow provided by groundwater aquifers. Considering the relatively low flow conditions during the summer months in the project reach and the consumptive groundwater use by the proposed project, in conjunction with consumptive groundwater use by single family dwellings and vineyards in the vicinity of the project area, the effects of reduced summer base flow on fish and wildlife resources may be significant. DFG recommends the County provide a more thorough analysis of the cumulative effect of consumptive groundwater use on the summer base flow in the final California Environmental Quality Act (CEQA) document. This analysis should consider the needs of potentially occurring aquatic species, particularly steelhead and coho salmon, during all seasons and life-history requirements. Any adverse effects of reduced flow should be avoided, minimized, or mitigated to a level of insignificance.

DFG is aware that vegetation at the project site has already been removed and grubbed. This vegetation consisted of oak and pine woodlands and open grasslands. These habitat types provide excellent habitat for wildlife. The unmitigated removal of these habitat types poses potentially significant impacts to terrestrial wildlife and plants including habitat loss, habitat fragmentation, habitat degradation, destruction of breeding sites, and restriction of animal movement, and the introduction or spread of exotic and invasive species. Unmitigated conversion of these habitat types to a vineyard or winery interrupts natural processes and eliminates the natural recruitment of habitat features, such as standing dead trees, downed woody debris, and cavity bearing trees. The unmitigated conversion of natural habitats is likely to reduce local availability of habitat for native plant and animal species. Considering that these habitat types recover slowly after disturbance, it is likely there will be a long-term loss of this habitat, due to the fact that replacement trees would not attain comparable size and structure over the course of many decades or more.

DFG recommends the final CEQA document incorporate mitigation measures to compensate for the removal of oak and pine woodland. DFG recommends that the County develop a vegetation management plan that would account for slow growth rate and the quality and quantity of habitat provided by these trees. For example, the County should develop mitigation scenarios for these impacts that should include setting aside, on-site or off-site, acreage for retention in perpetuity at a ratio of 3:1 for every acre of oak woodland habitat impacted. These sites should be maintained in

perpetuity and managed under an approved management plan with an appropriate monitoring and maintenance scheduled to be conducted for a minimum of ten years to ensure compliance. Furthermore, for individual oak trees with at least one trunk of two inches or more diameter at breast height or multi-trunked native oaks with aggregate diameter of five inches or more, the County should replace in-kind any oak tree removed with specimen trees (no less than 15-gallon size) with a total diameter equal to the individual or total combined diameter of the removed tree in a suitable location.

DFG appreciates the opportunity to comment on the proposed project. We remain available to be of further assistance to the County in finalizing the CEQA document. If there are any comments or questions regarding this letter please contact Mr. Dan Wilson, Environmental Scientist, at (707) 944-5534 or Mr. Richard Fitzgerald, Coastal Habitat Conservation Supervisor, at (707) 944-5568.

Sincerely,

Charles Armor
Regional Manager
Bay Delta Region

cc: State Clearinghouse

STATE OF CALIFORNIA – THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF WATER RESOURCES
CENTRAL DISTRICT
901 P STREET, 3RD FLOOR
SACRAMENTO, CA 958146424

December 3, 2008

Mr. David Hardy
Sonoma County Permit and Resource
Management Department (PRMD)
2550 Ventura Avenue
Santa Rosa, California 95403

Henry Cornell Winery Mitigated Negative Declaration

Dear Mr. Hardy:

This letter is being written to provide comments regarding the evaluation of groundwater resources for the proposed Henry Cornell Winery Project located at 245 and 420 Wappo Road in Santa Rosa, CA. I have reviewed the project's Mitigated Negative Declaration (MND) and many of the associated technical reports and correspondence. 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 Department of Water Resources (DWR) commented on an earlier version of this proposed winery project several years ago (DWR 2005). Continued areas of concern and project data deficiencies are discussed below.

Short-term airlift well testing results were used as the basic data set to analyze the groundwater availability and estimate the potential impacts of this project. This type of testing, which is periodically included on DWR well completion reports, is of limited value for evaluating long-term well yields and water level impacts to other wells and surface water features due to: 1) the short time period of the test; 2) the limited monitoring data collected during the test; and 3) the variable procedures used to conduct such tests by the numerous well drilling companies. The Groundwater Availability Study (RGH 2004) correctly noted the limited value of the abbreviated well tests for the following reasons: "(1) short (1/2 and 2 hour) duration of the single well tests; (2) the absence of one or more observation wells; (3) the absence of continuous drawdown data; and (4) the absence of well recovery data. A longer test with continuous drawdown data would facilitate identification of changes in the drawdown rate and the aquifer boundaries responsible for those changes."

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. The most appropriate test to assess long-term production rates and drawdown effects of the winery wells is a constant-rate aquifer test (at or near maximum drawdown); this would provide maximum stress to the aquifer and would be useful in determining the optimum project well pumping rates. The constant rate aquifer test would also determine if there are any water level impacts to nearby wells and surface water features during the testing period. The test should be multiple days in length while frequently monitoring the well production rates and water levels in the pumping well(s) and any neighboring wells that might be impacted by the project pumping. After completion of the constant-rate aquifer tests, the water levels in the pumping well(s) and other monitored wells should be measured for adequate recovery. Installation or use of several observation wells at various radial distances from the aquifer test wells is also appropriate. The winery wells should be aquifer tested individually, as well as together, to establish the full range of possible conditions that may exist during the life of the project. Additionally, the tests should be conducted during the summer/fall time period when water demand is highest and groundwater levels are typically their lowest. Analysis of the data collected during constant-rate aquifer tests will provide a much more accurate and realistic estimate of long-term project well yields and potential drawdown effects to area wells and surface water features. The Groundwater Availability Study (RGH 2004) also concludes that the analysis of groundwater conditions in fractured bedrock aquifers requires long-term pump test data that can be used to identify aquifer boundary conditions. We concur with their conclusion.

The evaluation of groundwater availability for this project is further complicated by the fact that this area is underlain by a heterogeneous mixture of bedrock of the Franciscan Formation and Sonoma Volcanics that has been folded and faulted. Groundwater within these formations is derived primarily from fracture flow within the bedrock units. Evaluation of groundwater resources in fractured bedrock areas is problematic due to the inherent difficulty in characterization of subsurface aquifer heterogeneity, fracture connectivity, and storativity. Cones of depression that form around pumping wells screened within fractured bedrock aquifers are likely to be highly irregular in shape and probably elongated in some direction based on the variable bedrock fracture orientations present beneath the site. These irregularities in cone of depression shapes and probable elongations could extend outward from the pumping wells for significant distances beyond what has been estimated in the project's Groundwater Availability Studies (RGH 2004 and Todd 2006). Due to the complex hydrogeologic environment in the vicinity of the project site and the uncertainty in the project well's zones of influence, it is recommended that the county require 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.

After further testing and analysis is performed and if the project environmental document gets approved, it is critical that this winery project be monitored in accordance with the PRMD Policy and Procedure 8-1-3 (PRMD 2004). Since the water needs of the project are estimated to be about 4 acre-feet per year (AFY), the project falls under the category of a "Large Commercial and Industrial Project defined as one which uses greater than 0.5 AFY, but less than 5 AFY of water. Due to the variability of groundwater supplies in fractured bedrock aquifers, the county should also consider increasing the monitoring frequency from quarterly to monthly for up to two years to provide the necessary baseline data to determine the optimum quarterly monitoring schedule to image the highest and lowest water levels. Also, monitoring wells installed as part of a formal aquifer testing program should be maintained and used as additional monitoring points for implementation of PRMD Policy and Procedure 8-1-3.

It is recommended that the Sonoma County PRMD require a higher level of aquifer testing and analysis be performed before further considering this project. This increased level of testing and analysis will produce a high-quality and scientifically-defensible data set that can be used to verify a proponent's conclusion that a project will not significantly impact groundwater and surface water supplies on surrounding properties.

If you have any questions, please feel free to contact me at (916) 651-0710.

Sincerely,

C. L Bonds

Christopher L. Bonds, P.G., C.HG.
Senior Engineering Geologist

References

DWR, 2005. Comment letter from Christopher Bonds, California Department of Water Resources to Ms. Lainey Gerber, Clerk of the Board of Supervisors, re: Henry Cornell Winery and Groundwater Resources, PRMD File 03-0092. June 3.

PRMD 2004. Policy and Procedure 8-1-3: Monitoring Guidelines for Large Capacity Water Wells Pursuant to General Plan Policy RC-3h. Sonoma County Permit and Resource Management Department.

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Todd 2006. Supplemental Groundwater Availability Study for Cornell Farms LLC, Sonoma County, California. Todd Engineers. August.

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10.453.01

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November 5, 2009

VIA FACSIMILE, EMAIL AND FEDERAL EXPRESS

Honorable Paul Kelley, Chairman
Mike Kerns, Member
Valerie Brown, Member
Shirlee Zane, Member
Efren Carrillo, Member
Sonoma County Board of Supervisors
575 Administration Drive, Room 100A
Santa Rosa, CA 95403

Board of Zoning Adjustments
c/o Permit Resource Management Department
County of Sonoma
2550 Ventura Avenue
Santa Rosa, CA 95403
(*via facsimile and Federal Express only*)

Re: Henry Cornell Winery Project, 245 Wappo Road
UPE 07-0008; SCH 2008102040; APN 028-260-041

Dear Supervisors and Board of Zoning Adjustments:

On behalf of New-Old Ways Wholistically Emerging ("NOWWE"), we respectfully submit comments opposing the Henry Cornell Winery Project proponent's reliance upon a Re-Issued Mitigated Negative Declaration ("MND") instead of preparation of an Environmental Impact Report ("EIR") for his Project at 245 Wappo Road, Santa Rosa. Because there is substantial evidence supporting a fair argument that the Project may have a significant effect on the environment, an EIR must be prepared for this Project.

I. INTRODUCTION

Mark West Creek houses an extremely sensitive ecosystem that has become increasingly degraded in recent years, as detailed in NOWWE's comments submitted October 8, 2009. Removal of trees and other vegetation has combined with excessive grading on steep, unsound slopes to produce erosion and landslides. Salmon and steelhead spawning and rearing habitat has been destroyed by the resulting sedimentation. Environmental concerns have been too frequently disregarded, as illustrated by the perfunctory environmental review that the Project has received. As discussed in our previous letter, ample evidence exists to support a "fair argument" that the Project "may" have significant adverse environmental impacts. This requires the preparation of an EIR under the California Environmental Quality Act ("CEQA"), Public Resources Code section 21000 *et seq.* *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1399-1400. But rather than prepare an EIR, the Project proponent has asked the County to *yet again* rely on an MND, albeit a slightly modified one.

The newly-reissued MND violates CEQA for the same reasons its predecessor did: it fails to *ensure* that the Project will not have adverse environmental impacts. The newly-added mitigation measures fail to remedy this deficiency. For example, the Project now includes the "extraordinary offer" of a conservation easement over an adjacent parcel that allegedly "immediately and fully offset[s] impacts of the projected winery water use on the Mark West Creek watershed." Re-circulated Mitigated Negative Declaration/Environmental Checklist, at 22. However, the conservation easement is meaningless for four reasons. First, it will not prevent the landowner from pumping the same volume of water from the ground. Second, the creek to which the easement would apply typically has no water in the dry season and thus the parcel owner has no surface flow to "swap." Third, a riparian water right may not be "swapped" to confer water rights on a non-riparian owner. Fourth, even disregarding these dispositive points, this easement only purports to compensate for "approximately 0.5" acre-feet/year ("AFY") of water use, *id.* at 22, while the Project's water use is estimated at "approximately between 3.82 and 3.98" AFY, *id.* at 20. On its face, then, this new mitigation measure fails to ensure that the Project will not have adverse hydrological and water quality impacts. The other new measures are similarly deficient and fail to mitigate the adverse geological and biological impacts that the Project will have.

Therefore, the recirculated MND, like its predecessor, once again violates CEQA in two fundamental respects: it fails to mitigate the Project's impacts, and it improperly defers the formulation of its mitigation measures. We accordingly once again urge the County to insist that the Project proponent prepare an EIR, as required by CEQA.

II. CEQA REQUIRES AN EIR TO BE PREPARED

A. CEQA REQUIRES AN EIR TO BE PREPARED WHENEVER THE RECORD SUPPORTS A "FAIR ARGUMENT" THAT A PROJECT "MAY" HAVE SIGNIFICANT ENVIRONMENTAL IMPACTS.

When passing the California Environmental Quality Act, the Legislature intended it to "be interpreted in such manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." *Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 259. "Since the preparation of an EIR is the key to environmental protection under CEQA, accomplishment of the high objectives of that act requires the preparation of an EIR whenever it can be *fairly argued* on the basis of substantial evidence that the project *may* have significant environmental impact." *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75 ("*No Oil*"). Because preparing an MND in lieu of an EIR "has a terminal effect on the environmental review process," CEQA mandates a "low threshold requirement for the preparation of an EIR." *Citizen Action to Serve All Students v. Thornley* (1990) 222 Cal.App.3d 748, 754 ("*Citizen Action*") (internal quotations and citations omitted).

As a result, section 15369.5 of the CEQA Guidelines [14 C.C.R.] permits the issuance of MNDs *only* when two requirements are *both* met: (1) revisions in the project made *before* the MND is released would "avoid . . . or mitigate" the project's adverse environmental impacts "to a point where *clearly no significant effects on the environment would occur*," and (2) there is "no substantial evidence" in the public record that the project "may" have a significant environmental impact. Neither of these criteria is met here. Therefore an EIR is required.

Courts reviewing the adequacy of negative declarations "do[] not . . . inquire whether there is substantial evidence to *support* the agency's determination of no significant impact," but instead focus on whether there is substantial evidence – *contrary* to the agency's position – that a project *may* have significant impacts. *Citizen Action,* 222 Cal.App.3d at 754 (emphasis added). In other words, "[i]f there [i]s substantial evidence that the proposed project *might* have a significant environmental impact, *evidence to the contrary is not sufficient to support a decision to dispense with preparation of an EIR* and adopt a negative declaration, because it could be 'fairly argued' that the project might have a significant environmental impact." *Friends of "B" Street v. City of Hayward* (1980) 106 Cal.App.3d 988, 1002 (emphasis added).

"[S]ubstantial evidence" includes "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts." CEQA Guidelines § 15384(b). Expert opinions, however, are only as "reliabl[e] and credibl[e] as the evidence constituting the foundation for those opinions." *Citizens' Committee to Save our Village v. City of Claremont* (1995), 37 Cal.App.4th 1157, 1170. Substantial evidence does *not* include "[a]rgument, speculation, unsubstantiated opinion or narrative, or evidence that is clearly inaccurate or erroneous, or evidence that is not credible." CEQA Guidelines § 15064(f)(5).

Conflicting expert opinions regarding whether a project may have significant impacts must be resolved in favor of the evidence showing a potential impact (assuming the conflicting opinions are both credible and supported by facts). *See* Guidelines § 15064(g) ("if there is disagreement among expert opinion supported by facts over the significance of an effect on the environment, the Lead Agency shall treat the effect as significant and shall prepare an EIR"); Remy, *et. al, Guide to CEQA* (11th Ed. 2006), at 262 ("credible expert testimony that a project *may* have a significant impact, even if contradicted, is generally dispositive; and under such circumstances, an EIR must be prepared"); *Practice Under the California Environmental Quality Act* (2d ed Cal CEB 2008), at § 6.42 ("When qualified experts present conflicting evidence on the nature or extent of a project's impacts, the agency must accept the evidence tending to show that the impact might occur. Evidence to the contrary is usually irrelevant, because the agency cannot weigh competing evidence").

The testimony of experts retained by NOWWE and others has amply met this lenient standard. As discussed below and in our previous letter, there is overwhelming evidence that the Project "may" have significant environmental impacts. The newly added mitigation measures entirely fail to remedy this deficiency. Thus, CEQA's "high objectives" mandate the preparation

of an EIR. *No Oil, supra,* 13 Cal.3d at 75. As before, there are three areas in which the MND's analysis is particularly inadequate: hydrological, geological, and biological impacts.

B. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THE PROJECT MAY CAUSE ADVERSE HYDROLOGICAL AND WATER QUALITY IMPACTS.

The "Hydrology and Water Quality" section of the re-issued MND has not been substantially changed from its previous iteration, with the exception of the addition of the aforementioned conservation easement. No new studies are referenced, although the MND does refer to previous concerns from the Department of Water Resources ("DWR") and the Regional Water Quality Control Board (without attempting to refute these concerns). The MND's discussion is still woefully inadequate, particularly with regard to cumulative impacts.

Understanding the conservation easement's shortcomings as a mitigation measure requires a brief discussion of the relevant facts. Total water use at the proposed Henry Cornell Winery was estimated by Todd Engineers in 2007 as being "approximately between 3.82 and 3.98" AFY. MND at 20. This includes an estimated 3.69 AFY for the 20-acre vineyard and an estimated 0.29 AFY for the wine factory. *Id.* The conservation easement, which is accompanied by the demolition of a house, will supposedly lead to a permanent reduction in water use at 100 Wappo Road of 0.5 AFY. *Id.* at 22. The MND concludes that "removing . . . 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." *Id.* The MND also states that a certain DWR employee thought the trade-off "sounds reasonable." *Id.*

This conclusion is erroneous for four reasons.

First, the proposed water swap fails to actually offset any of the water use of the wine factory. As discussed on page 4 of James Robinson's November 3, 2009 hydrogeologic report ("Exhibit 9"), the 100 Wappo Road site also contains a spring and well, neither of which were mentioned in the MND. The conservation easement only purports to forfeit the parcel's *riparian* rights, and *fails to prohibit well withdrawals*. MND at 2, 22. This omission "completely undermines the proposed relinquishment as a net gain to the creek," as the parcel owner may simply *pump* the same quantity of water, resulting in the same loss to the creek, as has happened in the past on that property. Exhibit 9 at 4.

Second, the creek to which the easement would apply typically has no water in the dry season and thus the parcel owner has no surface flow to "swap." As the record shows, the previous owner of 100 Wappo Road was forced to drill a well because, since the late 1990's, "no water has been available from the creek in certain times of the year including late summer." *Id.* at 3. Since the creek typically has no flow during the dry season, the proposed water rights swap is unlikely to reduce the Project's water use *at all*. The wine factory's water usage cannot be

offset by forfeiting the rights to water that *does not exist* during the times of year when it is *most needed* by the wine factory. Therefore, 0.42 AFY will still be removed from Mark West Creek if the Project is approved.[1]

Third, there is no lawful basis for the applicant's assumption that a riparian water right can be transferred to another property. Riparian water rights are by definition tied to the property's location adjacent to a specific watercourse. They are not transferrable, as a riparian owner may only use water on his riparian land. *Gould v. Eaton* (1897) 117 Cal. 539, 542 (injunction granted to lower riparian owner against use by upper riparian owner on non-riparian land). Since the riparian owner has no right to use riparian water on non-riparian land, he has no power to transfer this non-existent right to a non-riparian owner. Therefore Cornell Winery cannot acquire this non-existent right. Further, the unexercised riparian rights of future owners of the parcel ostensibly subject to the purported conservation easement cannot be extinguished by the current owner. *In re Waters of Soquel Creek Stream System* (1978) 79 Cal.App.3d 682, 687; *In re Waters of Long Valley Creek Stream System* (1979) 25 Cal.3d 339, 347, 358. For both of these reasons, the Project proponent's proposed "swap" of another landowner's riparian water rights is doubly unlawful and ineffectual. Consequently, it does not mitigate the Project's adverse effect on water supply.

Fourth, even disregarding these dispositive points, when comparing the winery's water use to the (soon-to-be-demolished) house's use, the MND *completely omits the vineyard from the winery's water use*. (Instead, the MND measures the 0.5 AFY from the house against the supposed "water use for the winery" of 0.29 or 0.42 AFY.[2]) Although "[t]he vineyard was approved and installed several years ago" (MND at 18), it is nonetheless inappropriate to segment the Project into distinct vineyard and winery aspects. The whole of the project – both wine factory and vineyard – must be considered when determining the amount of water the Project will use. This fact is recognized several times in the MND itself, which in both its past and present versions states that "Cornell Farms plans to pump approximately between 3.82 and 3.98 acre feet per year for groundwater. . . ." MND at 20 (parenthetical omitted); 2008 MND at 16. As the hydrologic reports completed by Todd Engineers explicitly recognize, "[t]he project requires about 4 acre feet per year of water. . . ." *Id.* The "project" thus requires 4 AFY, not 0.29 or 0.42 AFY. The water use of the Project as a whole must be considered when determining whether the Project will have adverse environmental impacts, especially when, as here, it is

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[1] This is because, even though the water will be pumped from wells and not directly removed from the creek, the project will "remov[e] groundwater from the aquifer that would ordinarily and eventually support the base flows of Mark West Creek and its tributaries." MND at 20.

[2] The original 0.29 AFY estimate understated the winery's water requirements by nearly 50%; the "project-specific" estimate is 0.42 AFY. This illustrates the dangers of relying on preliminary assessments.

unlikely that the wine factory would have been constructed but for the adjacent vineyard. CEQA Guidelines § 15378(a).

Withdrawing just 0.42 AFY from Mark West Creek during the dry season when there is very little flow in the creek will have adverse hydrological impacts for all of the reasons discussed in our previous letter. The MND's conclusion to the contrary is once again based on Todd Engineer's 2007 report, which concluded, "[c]onsidering 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[3] is insignificant." MND at 20 (periods in original). The idea seems to be that, because the project's water use is a small percentage of Mark West Creek's total dry year flow, there will necessarily be no adverse hydrological impacts. But this is erroneous because, as discussed below and in our prior letter, it assumes that Mark West Creek's flow is evenly distributed throughout the year, whereas in reality the flows are *much* lower during the dry season – precisely when the Project's water needs will be highest (Exhibit 9 at 2) – than they are in the wet season. Courts enforcing CEQA's requirements are acutely mindful of this distinction. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 448-449 (holding significant a ground water pumping project's potential impact on the Cosumnes River during periods of very low flow).

Todd's conclusion is not supported by facts but is instead the result of mere inferences, as illustrated by the fact that Todd's so-called peer reviewer[4] (Kleinfelder) was only willing to say that Todd "present[s] 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." MND at 20. The only thing clear about this assessment is that it is not exactly a ringing endorsement. As noted above, expert opinions only constitute substantial evidence if they are supported by *facts*, not mere argument. *Apartment Ass'n of Greater Los Angeles v. City of Los Angeles* (2001) 90 Cal.App.4th 1162, 1176 ("'Substantial evidence' is defined in the CEQA guidelines to include 'expert opinion supported by facts.' It does not include 'argument, speculation, unsubstantiated opinion, or narrative'" (quoting CEQA Guidelines § 15064(f)(5).) The opinions of experts, like Todd and Kleinfelder, who only opine as to what is either "reasonable" or "logical," are not substantial evidence.

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[3] As mentioned above, Todd proceeded from the accurate assumption that the whole "project" would use around 4 AFY of water. MND at 20. Todd estimated that 2 AFY would return to the aquifer, leaving a net impact of about 2 AFY. *Id.*

[4] As Engineering Geologist Raymond Waldbaum and Registered Professional Engineer, Registered Professional Geologist and Certified Engineering Geologist James Robinson both note in their reviews, Kleinfelder cannot ethically appear as a "peer reviewer" in a County in which it offers consultation services, much less on a matter in which it has been involved in the past in support of the same developer and agency.

Furthermore, Todd's study, and Kleinfelder's review of the same, suffer from a host of methodological deficiencies – as discussed in our prior letter and in NOWWE's expert reports – that render them unreliable. For example, Todd inappropriately used an airlift well test instead of a constant-rate aquifer test, as discussed on page 21 of the MND (as well as in our previous comment letter on page 5). The MND acknowledges this shortcoming, but fails to explain how or why Todd's study is nonetheless accurate. Todd also determined Mark West Creek's flow at a location *17 miles downstream* from the Project, a bizarre place to determine the Project's impacts. Kamman Decl., Exhibit 3 at 3. Other deficiencies abound. *See* Exhibit 9, at 4 (Kleinfelder review was a conflict of interest under pertinent professional standards); *id.* at 5 (reports fail to meet requirements 11, 13-17 of Sonoma County's mandatory Groundwater Checklist); *id.* at 6 (wastewater treatment plan omits key information and fails to demonstrate that wastewater will in fact meet discharge limitations). Unreliable expert opinions do not constitute substantial evidence.

Moreover, even assuming for the sake of argument that Todd's conclusion was *not* speculative and unreliable and *did* constitute substantial evidence, it is not enough to avoid CEQA's EIR requirement. As also noted above, when faced with conflicting expert opinions regarding whether projects will have significant environmental impacts, agencies are required to accept substantial credible evidence showing an impact may occur. Here, ample factually-based expert testimony demonstrates that even a small amount of added water use could have disastrous consequences for Mark West Creek. California's Department of Fish and Game wrote a letter to the County (Attachment 8 to the MND) that illustrates why Todd's conclusions are, at best, disputed:

> The MND estimates Mark West Creek has an average annual flow of 42,671 AFY and a dry year flow of 17,600 AFY; therefore, the net loss of two AFY is likely insignificant. The County should be advised that in coastal rivers and streams the majority, if not all, of the average annual flow in a watershed occurs during a relatively short period of time (i.e., December to March). Very little of the average annual flow occurs during the summer months when juvenile salmonids, fish, aquatic invertebrates and other fish and wildlife resources are most vulnerable to reductions in cool water from base flow provided by groundwater aquifers. Considering the relatively low flow conditions during the summer months in the project reach and the consumptive groundwater use by the proposed project, in conjunction with consumptive groundwater use by single family dwellings and vineyards in the vicinity of the project area, *the effects of reduced summer base flow on fish and wildlife resources may be significant.*

Flows during the summer are *so* low, in fact, that the amount of water that the Project would require "reflect[s] a relatively large, if not entire (100%), percentage of the dry season creek flow. Thus, the potential certainly does exist for the Cornell project to impart significantly adverse

reductions in creek summer base flow and, in turn, impacts to creek ecology . . . ." Exhibit 3, at 4. *See also* National Oceanic and Atmospheric Administration ("NOAA") letter to the Board of Supervisors, Exhibit 1, at 1 (because the summer/fall flows in Mark West Creek are so low, vineyard developments should verify their water sources, which "should not be tied to surface flow without first evaluating potential impacts on salmonid habitat.")

Where, as here, there is a "potential substantial impact on endangered, rare or threatened species" such as Mark West Creek's imperiled steelhead the impact "is *per se* significant." *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, *supra*, 40 Cal.4th at 449, citing CEQA Guidelines § 15065(a)(1).

Overall, then, there is "substantial evidence in the record [to] support[] a fair argument that [the] proposed project may have a significant effect on" water resources. *Gentry v. City of Murrieta*, *supra*, 36 Cal.App.4th at 1399-1400. The studies with contrary conclusions in the MND are not based on facts and contain methodological errors. Even if these studies were indisputably valid and reliable, CEQA would still require the preparation of an EIR, due to the presence of conflicting expert opinions supported by fact. The conservation easement fails to offset the Project's water use, and thus fails to remedy this deficiency. Even Todd Engineers "recognize[d] that long-term and cumulative indirect impacts to Mark West Creek and its tributaries may occur from project groundwater pumpage. . . ." MND at 20. An EIR must be prepared.

C. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THE PROJECT'S GEOLOGICAL DEFICIENCIES MAY CAUSE ADVERSE ENVIRONMENTAL IMPACTS.

The MND's discussion of "Geology and Soils" is also very similar to the discussion in the prior version, except it has been updated to reflect RGH's September 21, 2009 report and Kleinfelder's supposed peer review thereof, and includes two additional mitigation measures: (1) the septic system has been relocated "away from a potential landslide," and (2) the applicant is now required to pave his private road and "make abundant use of native plants" in the Project in an effort to minimize erosion. These two added mitigation measures, like the addition of the conservation easement, are inadequate to ensure the Project will not have adverse environmental impacts. Although the reports have been updated, they are still deficient, as discussed below.

Moreover, NOWWE's expert geologist pointed out significant deficiencies in RGH and Kleinfelder's studies last year (in Attachment 14 to the MND), yet RGH and Kleinfelder's new reports fail even acknowledge, much less respond to, these problems. Raymond Waldbaum's October 23, 2009 review of RGH and Kleinfelder's reports ("Exhibit 7"), at 2. Mr. Waldbaum's previous report is part of the public record and the issues raised within it should have been addressed.

The MND's "Geology and Soils" discussion is additionally inadequate because it still improperly postpones the formulation of mitigation measures until after the MND's approval, as discussed in more detail *infra* § III. *Compare* MND at 16 ("[A] detailed, site-specific Geotechnical Study shall be prepared and submitted with grading and construction plans. Said study . . . shall insure that the construction of the winery is engineered to eliminate the probability of downward creep, erosion, landslides, and soil/bedrock expansion") *with Sundstrom, supra,* 202 Cal.App.3d at 306-07 ("The requirement that the applicant adopt mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA.")

The first shortcoming in the re-issued MND is that the new mitigation measures are inadequate to ensure that the Project will not cause adverse environmental impacts. Although the septic system has been relocated away from one known landslide, it has been relocated to an area that may contain another landslide. As stated in Exhibit 7, although RGH attributes the potential landslide at this new location to "grading for an old roadway," the landslide is actually *outside* the area that was graded for the roadway, as demonstrated by Plate 9. *Id.* at 4. Additional studies are needed to verify that the landslide is not instead reflective of "a failure within weak natural soils and/or weak landslide debris and/or weak bedrock that exists in the leachfield area." *Id.* Unless this is shown, it is impossible to know whether the leachfield's water will have a "critical destabilizing effect" on the slope. *Id.* Before the County can properly rely on an MND, the Project proponent must show that improper building placement, grading, and associated slope work will not cause landslides, a significant environmental impact. The leachfield relocation must be subjected to further analysis before it becomes reasonable to conclude that there is *no fair argument* that its placement *may* cause adverse impacts. *See also Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311 ("[d]eficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences").

The other new mitigation measures are likewise insufficient to prevent landslides. For example, Mitigation Measure BIO-1 requires the Project proponent to pave his private access road (although only "to the extent he has legal control over the access road," which is not discussed further). This measure is designed to "provide long-term avoidance of fine sediments from the project reaching the creek." However, because paved roadways generate *more* runoff than unpaved roadways – because the roadway itself no longer absorbs any water – this mitigation measure has the potential to "*increase* overall erosion and deposition of sediment into adjacent watercourses" unless the paved roadway is designed extremely carefully. Raymond Waldbaum's November 4, 2009 review of Proposed Road Paving ("Exhibit 10"), at 1-2 (emphasis added). Even if the paved road *did* slightly reduce erosion from the Project, "it is important to keep the actual impact of the proposed minor road construction in proper perspective." *Id.* at 2. The site's "inherent geological instability" represents a "much greater threat[]" to the environment than a "very short section[]" of unpaved road. *Id.* Overall, this mitigation measure "appears to be . . . a 'red herring'. . . ." *Id.*

The second fundamental flaw in the re-issued MND's Geology and Soils discussion is that the geologic reports relied on by the Project proponent are still beset with a host of methodological flaws. Specifically, the reports (1) were prepared and reviewed by geologists who have *both* been subjected to professional discipline by a state agency for substandard geologic work in the past; (2) were "peer reviewed" by a geologist who has a conflict of interest under professional guidelines; (3) fail to map or assess the stability of the base of the hill that is being built on; (4) rely on a fill slope for stability, yet fill slopes are known to fail during earthquakes; and (5) improperly defer the development of the "Geotechnical Study report." These shortcomings are discussed in turn below.

First, both RGH and Kleinfelder have been subjected to professional discipline for their substandard geologic work in the past. RGH has received warnings in the past about its substandard work *on this site*. This warning specifically stated that RGH "may be practicing geology under the standard of care of a competent Professional Geologist." Exhibit 2, at 2. The sole geologist who stamped Kleinfelder's peer review, William McCormick (MND Attachment 7, at 3), was reprimanded *just this past April*, because he "failed to meet the standard of care" for geologists and certified engineering geologists. Exhibit 5, at 2. McCormick was disciplined because he "misrepresented geologic data and its relative significance in his Report when he presented incomplete and inaccurate geologic data, geologic interpretations, and fail[ed] to identify geologic hazards associated with slope stability [and] faulting . . . ." *Id.* at 3. The review of Mr. McCormick's work that the disciplinary action was based on ("Exhibit 4") can best be described as scathing. Mr. McCormick was taken to task for including insufficient data in his report, for failing to include critical information on maps, for "demonstrat[ing] negligence" in his professional work (in *five different ways*, *id.* at 5, 6, 8, 9), and for failing to meet the standards of practice required of geologists when his conduct did not rise to the level of negligence (*id.* at 6, 7, 9). The health and safety of both the public and the environment are being unnecessarily put at risk by the County's continued reliance on unqualified geologists.

Second, Kleinfelder's peer review of the RGH report was *also* an improper conflict of interest under the California Mining and Geology Board's "Guidelines for Reviewing Geologic Reports."[5] A conflict of interest "exists . . . where the geologic review is performed by a consulting geologist who also is . . . performing geologic investigations within the same jurisdictional area." *Id.* (parentheses omitted). This type of conflict "should be avoided, if at all possible." *Id.* The County has not attempted to demonstrate that it was infeasible to retain an independent, unbiased, geologist. Unsurprisingly enough, Mr. McCormick has been criticized before for having *his* work reviewed by someone with a conflict of interest. Exhibit 4 at 3. A biased peer review of a geologist who has previously practiced below geologic standards when working *on this project* – done by a geologist who has been reprimanded for demonstrating

[5]California Geological Survey - CGS Note 41-Guidelines for Reviewing Geologic Reports, *available at* http://www.consrv.ca.gov/cgs/information/publications/cgs_notes/note_41/Pages/Index.aspx.

negligence and performing substandard geologic work, no less – imparts little to no confidence in the review's results.

Third, RGH's report fails to assess the stability of critical offsite soils. As part of the Project, a buttress will be constructed on a descending slope near the property's boundary. Exhibit 7 at 3; Exhibit 8 at 2. However, RGH's soil stability assessment ends at the site boundary, which is not the base of the slope. *Id.* That is to say, RGH has proposed placing a buttress partway down a slope without assessing the stability of the soil the buttress will sit upon. "The base of the hill is an extremely important component of the stability analysis and without accurate data the whole calculation [of slope stability] could be grossly inaccurate." Exhibit 8 at 3. A buttress sitting partway up a descending slope "would only have a beneficial effect if the descending slope itself is stable, something that has not been demonstrated." Exhibit 7 at 3. If the keyway of the buttress "is to be placed at the edge of the property and not at the toe of the landslide debris, there is a possibility of the debris below the repair to reactivate." Exhibit 8 at 3. Overall, "[a] full geotechnical analysis of the slope along with test pits and topographic surveys to the base of the slope [is] required," not the simple *estimates* of slope, depth, and thickness present in RGH's report. Exhibit 8 at 3. RGH's failure to assess the slope's stability means that "the project has not demonstrated its construction feasibility relating to soil issues." *Id.* at 2.

The fourth shortcoming in RGH's report is that, although the grading plan includes construction of a large side hill fill slope, RGH fails to mention the fact that side hill slopes often "fail under seismic loading, even under the most favorable geologic and as-graded conditions." Exhibit 7 at 4. This was "[o]ne of the lessons of the 1994 Northridge earthquake," yet "[t]his apparent potential hazard is not only not evaluated in the RGH report dated September 21, 2009 . . ., it is not even mentioned." *Id.* If the Project is going to contain a fill slope, the MND must disclose that this slope could fail in an earthquake and must mitigate this potential impact.

Finally, RGH's report improperly defers formulation of the "Geotechnical Study Report," the report that will provide answers to critical geological questions. For example, RGH does not discuss how the creek will be protected from slope failure during grading. Waldbaum 11/11/08 letter (Attachment 14 to the MND), at 11. Nor does RGH discuss how backcut failure will be prevented, *id.*, or how the keyway or buttress will be designed. Exhibit 8 at 2. In essence, RGH simply defers everything to future analysis. "Detailed recommendations for buttress keyways, subdrains, fill placement and compaction recommendations will be presented in a Geotechinical Study Report once the use permit is approved." RGH 9/21/09 report ("Response to Board of Zoning Adjustments comments," Attachment 6 to the MND), at 21. "Upon issuance of a Use Permit [RGH] will prepare a Geotechnical Study Report that includes laboratory test data, analyzed cross sections and slope stability printouts, and recommendations for earthwork, foundations, retaining walls, slabs-on-grade, pavements and other geotechnical considerations for the design and construction of a properly built project." *Id.*

This is putting the cart before the horse. RGH has failed to include the answers to key questions that determine whether or not the Project as proposed is actually geotechnically feasible:

> The size of the buttresssed fill slope, the location, size and elevation of the keyway, have not been determined, the design has not been reviewed for constructability and it has not been reviewed for possible effects on the environment (i.e., [a]esthetics, deforestations, increased absorption of the soils, increased runoff). The buttressed fill has not been properly demonstrated as feasible. The report is incomplete and the County cannot rely on an incomplete report.
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> A Geotechnical Report, whether Preliminary or Final, requires the supporting data be included and provided, especially if the report is signed and stamped by a licensed Engineer and licensed Geologist. This slope stability analysis is required to include the calculations, the borehole logs, the cross-sections, the topographic map, the laboratory data, the proposed repair, the calculations and design drawings proving the repair is feasible. This was not provided in the signed and stamped "Response". A Complete Preliminary Report with slope stability analysis and supporting data should be submitted to the Board of Zoning Adjustments and made available to the public [before the County is] able to mak[e] a ruling on whether the project is feasible at this location as proposed.

Exhibit 8, at 2-3. Pursuant to the statewide standards of care governing geologic, geotechnical and grading practices, with the sole exception of fault movement, all geologic hazards must be eliminated ***before*** development may proceed. Rather than following this standard, RGH's approach asks the County to approve the use permit first, and find and mitigate geologic hazards later. This violates CEQA. RGH's failure to provide sufficient data and analysis in its geotechnical reports gives rise to a *fair argument* that the Project *may* have adverse environmental impacts, even with the newly-added mitigation measures. An EIR must be prepared.

D. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THERE MAY BE ADVERSE BIOLOGICAL IMPACTS.

The MND concludes that there will be no significant impacts to biological resources because "the project does not include modifications to any wetland or special habitat." MND at 9. It also states that there will not be substantial interference with fish or wildlife migration because "[n]o fencing is proposed that would obstruct wildlife movement. The project development does not include any work within a creek." MND at 11. These statements are entirely conclusory and completely unsupported by any kind of evidence, much less substantial

evidence, as required. Although the MND *does* include two new mitigation measures designed to reduce sediment from *erosion* in Mark West Creek, these measures fail to reduce the risk of sedimentation from *landslides*. *See supra* § II(C). Moreover, an important reason for adverse biological impacts – dewatering due to the Project's water use – is completely ignored, perhaps due to a misguided reliance on the water benefits of the conservation easement.

Mark West Creek is home to two federally-protected species, the steelhead trout (which is listed as "Threatened") and the coho salmon (listed as "Endangered"). Dr. Stacy Li's June 27, 2009 report ("Exhibit 6"), at 3-4; 71 Fed.Reg. 834 (Jan. 5, 2006) (steelhead); 70 Fed.Reg. 37160 (June 28, 2005) (salmon). Upper Mark West Creek has been designated Critical Habitat for steelhead. *Id.* at 4; 70 Fed.Reg. 52488 (Sept. 2, 2005). Salmon and steelhead habitat has been substantially degraded by sedimentation and low stream discharge. Exhibit 6 at ii. Moreover, "recent . . . land disturbing and property development activities . . . have seriously degraded the steelhead habitat quality in Upper Mark West Creek and will seriously degrade coho salmon habitat downstream." *Id.* at 2-3.

Last year, Dr. Li pointed out that in October 2008, the streamflow in Mark West Creek was so low (0.01 cfs, *about the same as the flow from a garden hose*) that any "[w]ater diversion under these very low flow conditions could easily drain the stream. Water diversion purposes such as frost protection or heat control," both of which are used in wineries, "would be particularly debilitating because water need for these conditions is on a regional rather than an individual basis, so water demand is large and simultaneous." MND Attachment 12, at 4. In 2008, the worst frost protection season in recent history, frost protection diversions killed federally listed species at least twice; once, endangered salmon were killed when the creek they lived in was literally sucked dry. *Id.*

The DFG letter discussed *supra* § II(B) also demonstrates that the Project is likely to have an adverse impact on fish and wildlife. "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 . . . . [¶] Considering the relatively low flow conditions during the summer months in the project reach . . . the effects of reduced summer base flow on fish and wildlife resources may be significant." MND Attachment 8, at 1-2. Exhibit 6 discusses extensively the adverse effects that sedimentation can have on salmonid habitat. In Dr. Li's opinion, "[t]he degradation of upper Mark West Creek is a clear and excellent example of adverse modification of critical habitat." Exhibit 6 at 105.

NOAA's letter, which commented on a previous iteration of this Project, illustrates the adverse effects that poorly-planned developments can have on biological resources. Exhibit 1 at 1-2. Low summer flows in Mark West Creek have in the past led to dewatering just upstream from the Project site. *Id.* at 1. Grading work has a deleterious effect as well: "[f]ine sediment in streams adversely affects spawning habitat, rearing habitat, and aquatic invertebrate production that is food for fish. . . Please ensure that land development is not occurring in inappropriate

places such as areas of high landslide potential." *Id.* Of course, the Project is to be located in just such a place. As such, it is reasonable for one to be "deeply concerned about degrading habitat quality in Mark West Creek from cumulative development activities such as water supply development and fine sediment generation from grading activities." *Id.* Yet the MND completely ignores the fact that the Project may have these effects.

The MND's determination that fish and wildlife will not be impacted is predicated on the MND's determination that there will be no impacts on hydrology/water quality or geology/soils. However, as discussed *supra*, that conclusion is flawed, and this fact is not changed by the three added mitigation measures. The Project's water use will come at a time of year when water is needed most by fish species, and the recent 2005 landslide has already significantly reduced the amount of available steelhead habitat and made it more difficult for steelhead to spawn. MND Attachment 12, at 3. The Project is therefore likely to have an adverse effect on biological resources, despite the MND's completely unfounded assertions to the contrary. An EIR must be prepared.

III. THE MND IMPROPERLY DEFERS FORMULATION OF MITIGATION MEASURES AND DELEGATES THEIR APPROVAL TO A SUBORDINATE AGENCY, IN VIOLATION OF CEQA.

As mentioned *supra*, CEQA requires that, when an agency decides to prepare an MND, mitigation measures must be incorporated into the project "*before* the proposed negative declaration is released for public review . . . ." *Sundstrom, supra*, 202 Cal.App.3d at 306 (quoting CEQA Guidelines § 15070(b)(1)). That is to say, "requir[ing an] applicant [to] adopt mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA." *Id.*

It is true that an agency may properly condition MND approval on, for example, an applicant's compliance with air and water quality, or other environmental, standards. *Id.* at 308. This is because compliance with such standards is based on "specific performance criteria articulated at the time of project approval." *Sacramento Old City Ass'n v. City Council* (1991), 229 Cal.App.3d 1011, 1028. However, such a situation *only* arises where an agency "recognize[s] the significance of the potential environmental effects, commit[s] itself to mitigating their impact, and articulate[s] specific performance criteria." *Gentry, supra,* 36 Cal.App.4th at 1395.

Requiring applicants to *commission future studies* and comply with the mitigation measures recommended in them, on the other hand, has been repeatedly held to violate CEQA. For example, in *Sundstrom*, a developer was planning to construct a hotel and restaurant; after potential impacts to hydrology and soils became apparent, the County required the applicant to "have a study prepared by a civil engineer which evaluates potential effects of the proposed development upon soil stability, erosion, sediment transport, and the flooding of downslope

properties and contains recommended mitigation measures to minimize such impacts." *Sundstrom, supra*, 202 Cal.App.3d at 306. The County also required review and approval of the plan by planning and building services, after which the mitigation measures would be incorporated into the use permit. *Id.* The court held that this condition constituted a "post hoc rationalization of agency actions" that would "inevitably have a diminished influence on decisionmaking"; this violated CEQA. *Id.* at 307. Moreover, such deferral of mitigation measures subverts one of the key purposes of CEQA: to ensure the adequacy of environmental review by exposing it to the public and interested agencies. *Id.* at 307-08. "By merely requiring administrative approval of the hydrological studies, the use permit provides no . . . guarantee of an adequate inquiry into environmental effects." *Id.* at 307. Finally, the court also held that the mitigation measure violated CEQA by improperly delegating to the planning commission staff the responsibility to, in essence, determine the adequacy of the negative declaration. *Id.* at 307.

Similarly, in *Gentry, supra,* 36 Cal.App.4th at 1396, the court also found a mitigated negative declaration to violate CEQA because it contained a deferred mitigation condition. There, the project approval permitted the City to require the applicant to submit a biological report regarding the Stephens' kangaroo rat; if such a report were to be required, the applicant would have to comply with "any recommendations" in it. *Id.* This condition was "on all fours with the condition in *Sundstrom*" and therefore also constituted an improper deferral of mitigation. *Id.* Because the record contained "substantial evidence to support a fair argument that the Project, even as mitigated . . . would have a significant effect on the Stephens' kangaroo rat . . . any proposed mitigation for impacts on the . . . rat had to be made available for public review" and not deferred for future formulation. *Id.* at 1397.

These cases are on point and govern the situation here. The MND requires Cornell to "prepare[] and submit[]" a "detailed, site-specific Geotechnical Study" that "address[es] all issues raised in the Preliminary Geologic Study . . . and . . . insure[s] that the construction of the winery is engineered to eliminate the probability of downward creep, erosion, landslides, and soil/bedrock expansion." MND at 15, 16. RGH's 2006 study (updated April 2008; Attachment 4 to the MND) candidly admits on page 21 that "[t]he primary geotechnical considerations and potential mitigating measures recommended for winery site development . . . will be addressed during a detailed site-specific Geotechnical Study." "Primary geotechnical considerations and potential mitigating measures" have thus *not yet been addressed.* There is therefore no evidence whatsoever, much less substantial evidence, to support the MND's assertion that "[c]ompliance with [RGH's preliminary] recommendations would reduce geology and soils impacts to a less-than-significant level." MND at 12, 13; *see also supra* § II(C). Even RGH's most recently updated report is missing large volumes of data and fails to make further preliminary recommendations.

Since the record contains "substantial evidence to support a fair argument that the Project, even as mitigated . . . would have a significant effect on" geology and soils, "*any* proposed mitigation [measures] for impacts" to such resources "ha[ve] to be made available for public

review." *Gentry, supra,* 36 Cal.App.4th at 1397. Their formulation may not be deferred to a later date so as to preclude public review. The history of this Project demonstrates why this is the case – RGH's preliminary reports have repeatedly failed to include critical information and have ignored crucial geotechnical questions. Fortunately, public access to the reports has exposed these deficiencies. Yet, currently, the site-specific geotechnical report that will actually determine whether or not the Project as proposed is geotechnically feasible will not be issued until *after* the County has already determined that (1) the project *is* geotechnically feasible and (2) will not have *any* adverse environmental impacts.

Additionally, by vesting the Permit and Resource Management Department (PRMD) with the power to "Review and Approv[e]" the future Geotechnical Study (MND at 15, 16), the MND improperly delegates the authority to devise and assess the adequacy of mitigation measures. When analyzing the restrictions quoted four paragraphs above, the court held that "the conditions improperly delegate the County's legal responsibility to assess environmental impact by directing the applicant himself to conduct the hydrological studies subject to the approval of the planning commission staff." *Sundstrom, supra*, 202 Cal.App.3d at 307. The court analogized the situation to that in *Kleist v. City of Glendale* (1976) 56 Cal.App.3d 770, 779, where "the court held that the city council cannot delegate responsibility for considering the EIR to a planning board;" in the *Sundstrom* Court's view, "[b]y necessary inference, the board of supervisors cannot delegate the responsibility to the staff of the planning commission." *Sundstrom, supra*, 202 Cal.App.3d at 307. So too here, the County cannot delegate this responsibility to the PRMD.

IV. CONCLUSION

The Project proponent has repeatedly ignored substantial evidence that the Project may have significant impacts on the environment. A new MND has been released, but its new "mitigation measures" are just as inadequate as its predecessor's. The MND improperly defers the formulation of many mitigation measures and unlawfully delegates the responsibility to approve these future mitigation measures to the PRMD. An EIR is clearly required. To proceed without one in the face of substantial evidence that the Project may have significant environmental impacts would be an abuse of discretion in violation of CEQA. If the County fails to prepare an EIR, NOWWE will be impelled to pursue appropriate legal remedies.

Thank you for considering our views on this important matter.

Very truly yours,

Stephan C. Volker
Attorney for New-Old Ways
Wholistically Emerging

EXHIBITS

(1) NOAA letter to the Board of Supervisors (June 7, 2005)

(2) Board for Geologists and Geophysics letter to RGH Environmental (Sept. 15, 2005)

(3) Kamman Decl., "Technical Review of Henry Cornell Winery" (Nov. 12, 2008)

(4) D. Scott Magorien, "Review of professional geological work by William V. McCormick" (March 20, 2009)

(5) Board for Geologist and Geophysics, "Citation Order" addressed to William McCormick (Apr. 29, 2009)

(6) Li report, "Habitat Inventory and Initial Assessment of Anthropogenic Sedimentation of Upper Mark West Creek, Sonoma County, California" (June 27, 2009)

(7) Waldbaum Decl., "Geologic Review of RGH Geologic Report in Response to BZA Comments, Cornell Wine Factory" (Oct. 23, 2009)

(8) Robinson Decl., "Review of Reports for Cornell Winery" (Oct. 23, 2009) [Geology]

(9) Robinson Decl., "Review of Reports for Cornell Winery" (Nov. 3, 2009) [Hydrogeology]

(10) Waldbaum Decl., "Proposed Road Paving," (November 4, 2009)

EXHIBIT 1

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-6528

June 7, 2005

Sonoma County Board of Supervisors
575 Administration Drive, Room 100-A
Santa Rosa, California 95403

Dear Supervisors of Sonoma County:

NOAA's National Marine Fisheries Service (NMFS) is writing in relation to a request by W. Guy Davis for a new winery at 420 Wappo Road, Santa Rosa, California, APN 028-260-047, Supervisorial District 1.

NMFS is responsible for the protection, maintenance, and recovery of anadromous salmonids. The Mark West Creek watershed supports steelhead trout (*Oncorhynchus mykiss*) and may still support coho salmon (*Oncorhynchus kisutch*), both listed as threatened species under the Federal Endangered Species Act. We are deeply concerned about degrading habitat quality in Mark West Creek from cumulative development activities such as water supply development and fine sediment generation from grading activities.

Mark West Springs Creek is excellent juvenile steelhead rearing habitat, but tends to have low stream flow during the summer and fall. There are two dewatering reports in Mark West Creek in the California Department of Fish and Game files. One was directly upstream of 775 Mark West Springs Road and the other was along St. Helena Road at Rancho Mark West. Any vineyard development should verify where they will get their water. We would prefer that the water source not be tied to surface flow without first evaluating potential impacts on salmonid habitat.

Fine sediment in streams adversely affects spawning habitat, rearing habitat, and aquatic invertebrate production that is food for fish. Minimizing non-point source pollution is also a concern of the Regional Water Quality Control Board. It is identified in their Basin Plan. Please ensure that land development is not occurring in inappropriate places such as areas of high landslide potential.

9

The Endangered Species Act alone is insufficient to minimize adverse impacts to listed species. Federal, state and local authorities, particularly those involved with land use practices, must consistently allow only responsible land development if listed species are to be protected, maintained, and ultimately restored.

Sincerely,

Steven Edmondson
Northern California Habitat Supervisor

cc: Dick Butler

EXHIBIT 2

Consumer Affairs

BOARD FOR GEOLOGISTS AND GEOPHYSICISTS
2535 CAPITOL OAKS DRIVE, SUITE 300A, SACRAMENTO, CA 95833-2926
TELEPHONE: (916) 263-2113
FAX: (916) 263-2099
E-mail: geology@dca.ca.gov
Website: www.dca.ca.gov/geology

September 15, 2005

Messrs. Neal Mace and Gary Russey
RGH Environmental
1305 North Dutton Avenue
Santa Rosa, CA 95401

Dear Messrs. Mace and Russey

Subject: Compliance with Business and Professions Code Section 7800 et seq. (Geologist and Geophysicist Act)

The Board for Geologists and Geophysicists (Board) is responsible for regulating the practice of geology and geophysics in the state of California. The Board's mission is to continuously enhance the quality, significance and availability of geological and geophysical services offered to the people of California. The Board's goal is to protect the health, safety and welfare of California consumers who utilize the services of geologists and geophysicists.

The Board has received a complaint against you regarding your geologic report, dated July 15, 2005, characterizing the extent and quality of ground water resources for a proposed winery at 420 Wappo Road in Sonoma Country California.

Pursuant to Title 16, California Code of Regulations section 3063, the Board for Geologists and Geophysicists is authorized to issue citations containing an order of abatement or an administrative fine against a professional geologist, geophysicist, or certified specialist who has committed any act or omission which constitutes a violation of the Geologist and Geophysicist Act or regulations. An order of abatement requires the cited person to cease the violation. Where appropriate, an administrative fine may be assessed which requires the cited person to pay a monetary fine of up to $2,500.00.

Section 7860 of the Business and Professions Code empowers the board to investigate the professional actions of any Professional Geologist and make findings thereon. In part, Section 3065 of Title 16, California Code of Regulations (CCR) states:

> "A violation of any of the following professional standards in the practice of geology or geophysics constitutes a ground for disciplinary action:
> (a) Competence:
> (1) A geologist or geophysicist shall undertake to perform professional services only when he or she, together with those whom the registrant may engage as consultants, are qualified by education, training, and experience in the specific technical and

scientific areas involved. (2) When practicing geology or geophysics, a registrant shall act with competence and reasonable care and shall apply the technical knowledge and skill which is ordinarily applied by registrants of good standing, practicing in this state under similar circumstances and conditions.

(b) Misrepresentation:

(1) A registrant shall not misrepresent nor permit the misrepresentation of his or her professional qualifications, affiliations, or purposes or those of the institutions, organizations or other businesses with which he or she is associated. (2) A registrant may advertise or solicit for any services for which he or she is authorized by registration provided such services are within his or her field of competence. (3) A registrant shall accurately represent to a prospective or existing client or employer his or her qualifications and the scope of his or her responsibility in connection with projects or services for which he or she is receiving or will receive compensation. (4) A registrant shall only express professional opinions that have a basis in fact or experience. (5) A registrant shall not plagiarize the professional work of others and shall attribute proper credit to others for their work or contribution. (6) A registrant shall not knowingly permit the publication or use of his or her data, reports or maps for unlawful purposes. (7) A registrant shall not falsely or maliciously attempt to injure or in fact injure the reputation or business of others. (8) A registrant shall not misrepresent data and its relative significance in any geologic or geophysical report.

(c) Conflict of Interest:

(1) A registrant shall not concurrently engage in any other business of occupation which impairs the registrant's independence, objectivity, or creates a conflict of interest in rendering professional services. (2) A registrant shall not accept compensation for services from more than one party on a project unless the circumstances are fully disclosed and agreed to by all such parties. Such disclosure and agreement shall be in writing. (3) If a registrant has any business association or financial interest which is substantial enough to influence his or her judgment in connection with the performance of professional services, the registrant shall fully disclose in writing to his or her client(s) or employer(s) the nature of the business association or financial interest. If the client(s) or employer(s) object(s) to such association or financial interest, the registrant shall either terminate such association or interest or offer to give up the project or employment. (4) A registrant shall not solicit or accept payments, rebates, refunds or commissions whether in the form of money or otherwise from material or equipment suppliers in return for specifying their products or services to a client or employer of the registrant.

Therefore, a licensee's professional services that fail to meet the standard of care of a competent Professional Geologist operating under similar circumstances in this state is subject to disciplinary action by the Board. The report presented to the Board indicate that you may be practicing geology under the standard of care of a competent Professional Geologist relating to the proposed winery project at the subject site.

The Board will not take further action on this case at this time as the internal report review dialogue with the Solano County Planning Department has not been finalized. Please submit written confirmation that you are in compliance with the terms of the Act and the Board's Regulations presented herein within 20 days of receipt of this notice.

A copy of the Geologist and Geophysicist Act and Rules and Regulations is posted on the Board's website at www.dca.ca.gov/geology. If you need more information, clarification or have any other questions, please call George Dunfield, the Board's Enforcement Manager, at (916) 263-0341

Sincerely,

PAUL SWEENEY
Executive Officer

cc: Mr. Gary Duke, Department of Consumer Affairs, Legal Office
Ms. Sigrid Swedenborg, Solano County Planning Department

EXHIBIT 3

Kamman Hydrology & Engineering, Inc.
7 Mt. Lassen Drive, Suite B250, San Rafael, CA 94903
Telephone: (415) 491-9600
Facsimile: (415) 680-1538
E-mail: Greg@KHE-Inc.com

November 12, 2008

Ms. Kimberly Burr, Esquire
P.O. Box 1246
Forestville, CA 95436

Subject:: Technical Review of Henry Cornell Winery, 245 Wappo Road, Santa Rosa, CA
APN 028-260-041

Dear Ms. Burr:

I am a hydrologist with over twenty years of technical and consulting experience in the fields of geology and hydrology. I have a Master's of Science degree in Geology received from Miami University (Oxford, Ohio) in 1989 and I am a California Professional Geologist and Certified Hydrogeologist. I have been providing professional hydrology services in California since 1991 and routinely manage projects in the areas of surface- and groundwater hydrology, water supply, water quality assessments, water resources management, and geomorphology. Most of my work is located in the Coast Range watersheds of California, including the Northern San Francisco Bay Counties. My areas of expertise include: characterizing and modeling watershed-scale hydrologic and geomorphic processes; evaluating surface- and ground-water resources/quality and their interaction; assessing hydrologic, geomorphic, and water quality responses to land-use changes in watersheds and causes of stream channel instability; and designing and implementing field investigations characterizing surface and subsurface hydrologic and water quality conditions. I also teach an annual course on hydrology and geomorphology through the University of California Extension (Berkeley) and provide technical presentations and lectures to public/community and non-profit groups. I co-own and manage the hydrology and engineering consulting firm Kamman Hydrology & Engineering, Inc. in San Rafael, California (established in 1997).

I have reviewed the project's Mitigated Negative Declaration (Declaration) dated November 13, 2008 and many of the County staff reports, supporting technical reports and correspondence regarding the surface water and groundwater hydrology conditions at the project site. The focus of my review was to provide a technical assessment on the potential project-induced impacts on water resources and whether the Declaration and supporting materials adequately assess potential impacts. I also reviewed a number of additional hydrologic and meteorologic data sets, reports, and maps to substantiate the assumptions and values I use to evaluate potential impacts to water resources by project proponents.

Based on my review and technical experience within Sonoma County and the Northern San Francisco Bay area, it is my opinion that the Declaration does not fully or correctly characterize and quantify potential project-induced impacts to water resources and the project still poses potential adverse impacts to these and related resources. The rationale supporting my opinions are discussed in the following sections.

1.0 Uncharacterized Groundwater Aquifer Conditions

The project proponents have not adequately evaluated or ruled out the potential for adverse impacts on local groundwater and surface water resources due to proposed groundwater extractions from the Cornell wells or the combined effect of groundwater extractions from other vineyards and development planned on neighboring parcels. As described in the 2006 Todd report, the Cornell site is underlain by a variety of geologic formations, primarily the Franciscan Complex and Sonoma Volcanics. These deposits consist of a variety of rock types, including lava flows and ash deposits of varying composition, degree of cementation, fracture porosity and permeability. A geologic fault trending NE-SW also occurs within or immediately adjacent to the site, contributing to the complex juxtaposition of geologic units. These rocks are arranged in a complex fashion – any given unit may lack wide aerial continuity, lack consistent depth and some units may have lenticular geometry or have interfingering contacts with differing adjacent rock types. The primary permeability hosting groundwater movement through these rocks results from fractures in the relatively impermeable rock matrix. The complex transitions/boundaries between rock types also likely result in heterogenous water flow patterns through and between rock types.

Based on my experience in conducting hydrologic investigations at sites underlain by the Franciscan Complex and Sonoma Volcanics and published accounts of groundwater flow conditions in these rocks by others (USGS, 2003; Slade & Associates, 2001a and 2001b; Lamphier-Gregory, 2003), it is my opinion that the groundwater flow conditions (i.e., rates of flow, patterns of flow, contributing aquifer storage capacity) have not been sufficiently characterized at the Cornell site to make any definitive statements as to whether the project will or will not adversely impact surrounding wells, seeps, springs, or other consumptive users.

One concern I have regarding the proponents characterization of groundwater conditions is that the simplified and empirically-derived analytical relationships that were used to calculate aquifer transmissivity and storativity (see pages 11 and 12; Todd, 2006) are premised on a long-list of governing assumptions, which are compromised, if not entirely invalidated, when applied to a non-homogeneous aquifer of limited lateral dimensions and not displaying similar hydraulic properties in all directions (e.g., bedrock fracture-dominated and many volcanic-derived aquifer systems). It is not unreasonable to expect that the zone of influence from a pumping well in a fractured bedrock aquifer, with preferred flow directions possibly influenced and enhanced by the alignment of a contributing fault zone, would extend for notable distances beyond what would be estimated for a homogeneous and laterally extensive aquifer. Because of this possibility and the fact that the local fault bisects both the North and South Watershed Creeks, it is not unreasonable to assume that there is a direct connection between the groundwater system underlying the project site and adjacent creeks.

As described above, aquifers within the Franciscan Complex and Sonoma Volcanics are typically heterogeneous in nature. The best and most appropriate method for determining groundwater flow and storage characteristics in fractured bedrock aquifers like those that exist under the Cornell site is to perform an aquifer test, where a well is pumped in a controlled fashion for an extended period and adjacent wells and water bodies (e.g., Mark West Creek) are monitored for a response (Driscoll, 1986). The California DWR also specifically recommends

an aquifer (pump) test as part of the Cornell project impact assessment and further describe the procedure (DWR, 2005). If performed correctly, an aquifer pumping test can quantify the optimum well pumping rate from the aquifer as well as a storage estimate for the aquifer and radius of influence - parameters that are needed to determine the safe yield from an aquifer and potential impacts on the surrounding users and environment. Therefore, it is my opinion that an aquifer pump test is required to adequately evaluate potential impacts from Cornell groundwater withdrawls on local area water resources, and in turn, ecological conditions sustained by dry-season, groundwater-fed baseflow in the Northern and Southern drainage area creeks.

2.0 Inadequate Impact Evaluation on Mark West Creek

The project proponents evaluation of potential project impacts on Mark West Creek is misleading and inappropriate in that it does not address the watershed within, adjacent to, or even within approximately 17 river miles of the project. The amount of consumptive water use by the winery (estimated at about 2.0-AFY) has been compared to creek flows measured and estimated for a USGS stream gauge located at Highway 101 or approximately 17-miles downstream of the project site. No evaluation of potential impacts to creek flows and ecological conditions within the North and South Watersheds was completed nor the mainstem creek reach immediately downstream of the North and South Watersheds. Any impacts to water resources and the environment associated with the project will be greatest and most significant within and immediately adjacent to the site - not a location 17-miles downstream and having an intervening drainage area of approximately 40-square miles. Thus, the contention that project water usage is a small percentage of Mark West Creek flow is misleading and inaccurate conclusion.

I've reviewed available USGS stream flow records for gauged watersheds to the Russian River which display similar rainfall and runoff characteristics to the North and South Watersheds. I've also reviewed CDFG Stream Survey reports for the summers of 1965, 1969, 1979 and 1996. In addition, I completed a field reconnaissance on November 10, 2008 and observed dry conditions on the lower North Watershed creek and very low flows on the South Watershed creek adjacent to project parcels. Based on these data and observations, flows in the North Watershed creek typically go dry by late summer and very low summer perennial flows (0.6 to 2-cubic feet per second [cfs]) are maintained in the lower portion of the South Watershed creek and mainstem below the confluence of the North and South Watersheds. These flows are significantly lower than the Mark West Creek flows (dry year flow of 17,600 AFY [equivalent dry year flow rate of 24.3 cfs] and average water year-type flow of 42,671-AFY [equivalent average year flow rate of 58.9 cfs]) used by project proponents to evaluate project-induced impacts on Mark West Creek. It is also important to point out that dry-season baseflows in the North and South Watershed creeks are sustained by groundwater contributions and groundwater pumping during the summer and fall months will have the potential to significantly impact (i.e. reduce) creek baseflows that support aquatic organisms and riparian vegetation.

Using data provided in Todd's 2006 report, I've estimated the groundwater pumping rates for the overlapping the 45-day crush/processing period and 120-day irrigation season. When both of these activities are occurring under the Phase 1 project conditions, I estimate average groundwater pumping rates to be 7.7 gpm, increasing to 8.4 gpm under Phase 2 project conditions. Todd (2006) reports maximum groundwater pumping rates of 15 gpm are possible during this period. These pumping rates are not small or insignificant in comparison to dry

season creek flow, but actually reflect a relatively large, if not entire (100%), percentage of the dry season creek flow. Thus, the potential certainly does exist for the Cornell project to impart significantly adverse reductions in creek summer base flow and, in turn, impacts to creek ecology within and downstream of the confluence of the North and South Watersheds.

3.0 Incorrect Water Budget Assessment

The quantification of potential adverse project impacts on water resources by the project proponents relies substantially on the water budget prepared by Todd (2006). It is my opinion that this water budget is flawed and the estimates on several water demand variables are significantly underestimated as described below. This results in overestimates of water availability for groundwater recharge and storage, leading to inaccurate conclusions (i.e., reduced threat) regarding potentially significant impacts. I also call into question two other items: 1) the estimate for project return flows, equal to approximately 2 AFY, a value that is unsubstantiated; and 2) the estimated water demand for bottling 10,000 and 20,000 cases of wine.

3.1 Unsubstantiated Return Flows

On pages 19 and 20 of the 2006 Todd report, an irrigation and septic tank return flow of 1.99 AFY is stated as a source of water inflow to the project water budget. This value is 50% of stated total groundwater demands for the project. There is no explanation of how this value was derived or justified. Assuming that the majority of this return flow is irrigation return flow, this value reflects a very poor irrigation efficiency. A notable reduction in project groundwater demand and potential stress on limited water resources could be realized by introducing better water conservation practices through improved irrigation efficiency. This would reduce the potential for project-induced impacts.

3.2 Bottling Water Demand

The proposed project indicates that it will support 20-acres of vineyard. Using data supplied in the April 13, 2008 Sonoma County Fact Sheet (www.SonomaCounty.com/media/press-releases/), a 20-acre vineyard will produce approximately 6600 cases on wine (3958 bottles per acre; 12 bottles per case). It is unclear why the project water demand is based on 10,000 and 20,000-cases of wine for Phase 1 and Phase 2, respectively. Unless the Cornell winery is anticipating importing additional grapes for production, the project could reduce groundwater pumping demands and potential impacts to local water resources if it only needs to process 20 acres of vineyard.

3.3 Evapotranspiration

The estimated water budget losses by evapotranspiration (ET) are significantly underestimated. In essence, Todd (2006) assumes that because monthly rainfall rates are greater than evapotranspiration rates during the months of October through March, they can discount water losses due to evapotranspiration during this period. This results in reducing an initial annual ET demand of 42.29-inches by 10.47 inches, yielding an annual ET total of 31.82. This assumption is incorrect because the process of evapotranspiration continues year-round including October through March. Todd's (2006) Figure 13 indicates that ET occurs during these periods. This error in the ET water demand overestimates the amount of water available to surface water runoff and groundwater recharge in the project Watersheds.

3.4 Stream Flow

Annual stream runoff estimates for the North and South Watersheds are stated to be 34-percent of annual rainfall while the runoff 17-miles downstream at the former USGS Highway 101 stream gauge is estimated at 50-percent of the annual rainfall. It is my opinion that the estimated annual runoff for the North and South Watersheds are significantly underestimated for the following reasons. First, a typical runoff phenomenon experienced in Northern California watersheds is that there is an increase in the runoff volume per unit area as one moves upstream or towards the headwater reaches. This pattern is reversed in Todd's estimates of runoff between the project and former USGS gauge drainage areas. The principal reason for the increase in runoff per unit area in the upstream direction is associated with increasing average slope of the contributing drainage area – increased slope promotes faster and increased runoff.

Another reason I feel the runoff volumes from the North and South Watersheds are underestimated comes from review of available annual rainfall and runoff figures for drainage areas within the Russian River basin as published by Rantz (1974) of the USGS (see Table 1, attached). This report indicates that with the exception of one basin, runoff from Russian River watersheds range from 41- to 74-percent of mean annual rainfall and from 51- to 63- percent of mean annual rainfall from headwater drainages similar in elevation, slope and meteorology to the North and South Watersheds (e.g., Big Sulphur, Dry and Mill Creeks). Based on these data, I estimate the annual creek runoff from the North and South Watershed to be around 55- to 60-percent of the mean annual rainfall. Similar to the inaccurate ET estimate, the low surface water runoff values used in the water budget lead to overestimates in the amount of water available to groundwater recharge and inaccurate conclusions (i.e., reduced threat) regarding potentially significant impacts.

4.0 Incomplete Analysis of Cumulative Impacts

The project proponents have not completed a full evaluation of the cumulative project impacts on water resources. An accurate existing conditions water budget has not yet been created; one that includes the water demands of the adjacent Pride Winery, located east of the Cornell project site and any other existing residential and agricultural entities within the North and South Watersheds. Only after all cumulative existing demands are incorporated into the existing water budget can an accurate assessment of Cornell project conditions be completed. Incorporating the demands and water withdrawals associated with the Pride Winery (e.g., vineyard irrigation demands for approximately 60-acres of vineyard as measured off of aerial images), will incorporate an estimated 10-AFY of additional irrigation demands not currently captured in the project impact assessment.

5.0 Groundwater Basin Overdraft

In order to better evaluate the current overdraft condition of the groundwater basin, the water budget will need to be revised and recalculated to incorporate more realistic ET and stream runoff variables. It will also need to incorporate demands and influences from the Pride Winery and other residents and agricultural operations within the affected watershed. It is our understanding that water is being trucked up to the Pride Winery alluding that the existing Pride wells and other supplies are currently insufficient to meet their existing needs. The degree to

which this is associated with dry water year-type conditions or excessive demands should be assessed.

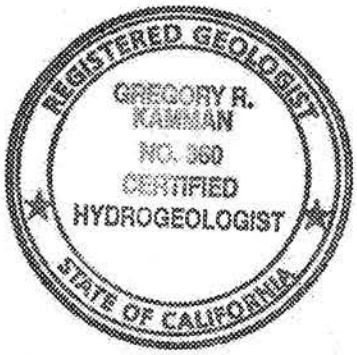
It's my sense that updating the water budget with more accurate ET and runoff estimates will lead to significantly greater cumulative water outflows than previously estimated. This will lead to significantly less water available to groundwater recharge, altering the relative proportion of project withdrawals to recharge and posing a greater potential project impact on groundwater resources. In addition to a refined water budget, a better estimate of aquifer storage will be needed to responsibly assess the state of groundwater overdraft within the basin. The only accurate method for determining the true aquifer storage is through completion of the aquifer test discussed under Section 1.0 above. These are all important and necessary analyses required to accurately evaluate if these potential impacts are significant or not.

In closing, its my opinion that the potential impacts to water resources in the North and South Watersheds have not been adequately assessed and there is a real potential for project-induced adverse impacts to water and other resources. Until these potential impacts are assessed, I recommend that the Sonoma County Permit and Resource Management Department reconsider authorizing a Mitigated Negative Declaration on the Cornell Winery project. At the very least, the County should require that the Cornell project proponents address the water resource assessment deficiencies outline in this letter prior to authorizing the project to proceed.

If you have any questions or concerns, please call me.

Sincerely,

Greg Kamman, P.G., R.HG.
Principal Hydrologist



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Todd, 2007, Memorandum to Mr. Jon Tracy, R.E.H.S., County of Sonoma PRMD, June 12, From David W. Abbot, 5p.

USGS, 2003, Ground-water resources in the Lower Milliken-Sarco-Tulucay Creeks area, Southeastern Napa County, California, 2000-2002. U.S. Geological Survey (Water-Resources Investigations Report 03-4229).

Russian River Basin	Drainage Area (mi2)	Mean Annual Precipitation (inches)	Mean Annual Runoff (inches)	Runoff / Precip (%)
Russian River drainage between gages near Cloverdale and near Healdsburg, but excluding gaged areas of Big Sulphur Creek, Maacama Creek, and Franz Creek	148.6	40	15.3	38
Russian River drainage between gages near Healdsburg and near Guerneville, but excluding gaged areas of Dry Creek, Mill Creek, and Santa Rosa Creek	361	35	18	51
Cummisky Creek near Cloverdale	13.4	39	22.2	57
Big Sulphur Creek near Cloverdale	82.3	48	30.1	63
Maacama Creek near Kellogg	43.4	58	23.7	41
Franz Creek near Kellogg	15.7	40	18.9	47
Dry Creek near Cloverdale	87.8	47	24.1	51
Warm Spring Creek at Skaggs Springs	32.7	50	30.5	61
Dry Creek drainage between gages near Cloverdale and near Geyserville, but excluding gaged area of Warm Spring Creek	41.5	46	23.4	51
Mill Creek near Healdsburg	11.5	50	26.6	53
Santa Rosa Creek near Santa Rosa	12.5	36	18.7	52
Big Austin Creek at Cazadero	26.6	65	47.8	74
Austin Creek near Cazadero, but excluding gaged area of Big Austin Creek	36.5	59	32	54

Table 1. Mean annual precipitation and runoff for watersheds to the Russian River (Rantz, 1974).

EXHIBIT 4

D. SCOTT MAGORIEN, C.E.G.1290
ENGINEERING GEOLOGIST

ORIGINAL

March 20, 2009

2009 MAR 23 PM 2:42

Board for Geologists and Geophysicists
1625 North Market Blvd., N-324
Sacramento, CA 95834

Attention: Mr. George Dunfield, Assistant Executive Officer

Subject: Review of professional geological work by William V. Mc Cormick, C.E.G. 1673, Case No. CG 2007-52

Mr. Dunfield,

As requested I have completed my review of the documents provided by the Board for Geologists and Geophysicists (BGG) relating to a complaint filed with the BGG regarding a geologic/geotechnical report entitled "GEOLOGIC AND GEOTECHNICAL INVESTIGATION SAGGIO HILLS, HEALDSBURG, CALIFORNIA" (Report), dated October 29, 2004, and professionally certified by Mr. William V. McCormick, CEG 1673. The report was prepared in support of the proposed 254-acre development for 48 lots with "building envelopes" to accommodate custom single-family homes and attendant driveways, 14,000 lineal feet of roadway improvements, 4,100 lineal feet of retaining walls, a 21-acre resort, and 2.6-acres for affordable housing in the City of Healdsburg, California.

510 Superior, Suite 200 Newport Beach, CA 92663 • telephone (949) 574 7096 • fax (949) 642-4474
Email: scott.magorien@amec.com

General Site Conditions

Topographically, the project area is characterized by a series of low-lying hills with narrow to broad ridge tops with surrounding slope gradients ranging from about 6:1 (horizontal to vertical) within first-order hillside drainages to approximately 2.5:1. Surface elevations are reported to range from 180 to 430 feet above mean sea level. However, the topographic base map used to create the SITE GEOLOGY map (Plate 2) does not provide any actual elevation data.

According to information presented in the Report, there are a number of geologic hazards present within the site. These include active faulting associated with the Healdsburg fault zone, landslides, expansive soils and bedrock materials, creeping soils on hillsides, weak/porous alluvial soils, soil erosion and drainage, and possibly aspestosform bedrock units (i.e. serpentinite) within the fault zones. At least three active fault traces are identified bordering the western margin of the proposed residential area, which up until 1983 were contained within an Earthquake Fault Zone Special (AP Zone), formally known as Alquist-Priolo Special Studies Zone. Apparently, in the early 80's the State Geologist reassessed the available evidence for active faulting for this AP Zone for the Healdsburg fault and did not find clear and compelling evidence (i.e. faults that were well-defined and sufficiently active) to support the AP designation and so removed it from their official maps.

There are 22 landslides mapped in the project area, the majority of which originate at the heads of the first order hillside drainages and appear to involve colluvial-type soils and weathered bedrock. Most of the landslides are identified as debris slides, earth flows, and slumps, which suggests that surface and/or shallow groundwater buildup is a major contributor to slope failures in the area. No deep-seated (i.e. greater than 15-feet thick) landslides have been identified.

Allegations against Mr. McCormick

The complaint, which is outlined in a letter by a local engineering geologist (EG) who performed an engineering geologic review of the Report, alleges that the Report "...does not conform to the standard of care required by The Geologist Registration Act, directives from the State of California Mining and Geology Board, directives known as "Notes" from the California Division of Mines and Geology, and the City of Healdsburg "Engineering Geologic Report Minimum Elements." In addition, the EG states that, in his professional opinion, the geologic information presented in the Report is insufficient to demonstrate that site conditions are favorable for geologic stability or that it is feasible to mitigate the potential geologic hazards affecting the proposed project.

An interesting aspect of the complainant's allegations regarding nonconformance with the City of Healdsburg's Engineering Geologic Report Minimum Elements, is the fact that the Report was submitted to the City's geologic peer review consultant Mr. Jim Joyce CEG, of Joyce and Associates (in conjunction with Alan Kropp of Kropp & Associates) who reviewed and accepted the report. However, there was no actual independent peer review by these two reviewers in light of the fact that they both had performed geologic and geotechnical work associated with the affordable housing element for this project in 2003. Under these circumstances, these two individuals should have recused themselves from performing review services to the City for this particular project, as this would certainly be viewed as a conflict of interest. Therefore, under the circumstances the so-called approval of the Report by the City's reviewer, the approval which Mr. McCormick has used in his partial defense against the complaint against him, should not be considered valid.

Report Review Comments

Based on my review the Report, the following presents my assessment of the geologic work performed by Mr. McCormick and my opinions as to whether he departed from the standards of

professional practice of a licensed CEG with respect to his professionally certified work relating to the Saggio Hills site in Healdsburg, California.

- Under heading 1.3 Purpose and Scope, the following statements are made about the main purpose of the Report is "... provide geotechnical design-level recommendations for project infrastructure and resort development" and "... is not intended to provide lot-specific recommendations for lot development such as grading, drainage control or foundation design. The report is intended to provide information for mitigation of adverse geologic and geotechnical conditions..." However, although the Report presents geologic information and geotechnical mitigation concepts for foundation support for the portion of the resort area underlain by alluvial soils, there is no geologic data presented in the Report, or on the Site Geology map, to support the recommendation presented in the Report under the heading 9.3 SLOPE CONSTRUCTION, that "Cut slopes as steep as 2H; 1V may be considered feasible where competent bedrock is exposed...." Given the absence of basic geologic structure of the bedrock (i.e. bedding plane geometry, presence or absence of weak clay layers, shears, joints, etc.) and slope stability analyses, such a statement is unwarranted.

  Moreover, under the heading 9.1 BUILDING ENVELOPES, the Report concludes that "Based on the data collected and analyzed during this study, the majority of the proposed building envelopes, shown on Plate 3, are considered geologic and geotechnically feasible as drawn." In the same paragraph it states "There are eight lots that we recommend alteration to the proposed building envelopes or specific mitigation concepts." Although no site-specific subsurface investigations were performed for these eight lots, or any of the other 40 lots for that matter, the Report recommends re-shaping or shifting particular segments of the building envelopes by a minimum of 30 feet to avoid existing or possible landslides, and/or recommending subsurface drainage improvements, possible corrective grading, or non-conventional foundation design.

- The 200-scale topographic base map used for Plate 2- SITE GEOLOGY map was reportedly prepared by Carlile-Macy, Civil Engineers. Although the map shows the distribution of the various geologic units, locations of exploratory borings, test pits, and fault trenches, there are no elevations for the topographic contours, or any other elevation points for reference. Moreover, and more importantly, there is no geologic structure data presented on the map, such as strike and dip of bedding planes, joints, shears, faults, or geologic contacts. These types of data are basic forms of geologic information that a competent geologist performing the same scope of work in this type of setting would always be presented on a geologic map. In this circumstance, Mr. McCormick has significantly deviated from the standard of practice, and, in my opinion, demonstrates negligence.

- In addition, although the SITE GEOLOGY map shows the traces of four faults associated with the Healdsburg fault zone within the western portion of the site, there is nothing on the map that would identify them as active, potentially active, or inactive. It is left for the reader to find in the report that all the faults shown are considered active. Moreover, more importantly, Mr. McCormack does not provide any recommendations for structural setbacks for any of these active faults. For active, as well as potentially active faults it is always mandated that the licensed geologist establish appropriate structural setbacks. In the absence of a setback recommendation (i.e. 50 feet or more), Mr. McCormick has significantly deviated from the standard of practice, and, in my opinion, demonstrated negligence.

- Plate A-38 "SCHEMATIC GEOLOGIC CROSS SECTION A-A' in the Report presents the only geologic profile that is meant to delineate geologic hazards, such as landslides, faults, collapsible alluvial soils, as well as the nature of the geologic structure in the project area. The standard of practice for a licensed geologist is to construct geologic

cross sections (usually more than one) depicting these various geologic hazards and basic geologic structure trending through areas where proposed habitable or other significant development is planned or proposed. Given the size of the SAGGIO HILLS project area, the locations of the proposed developments, and the nature of the geologic hazards present within the site, the standard of practice would dictate constructing at least two to three additional cross sections at a more appropriate scale.

Moreover, in the case of the sole SCHEMATIC GEOLOGIC CROSS SECTION A-A', this section neither passes through any of the proposed building envelopes, which it should, but the proposed building envelopes are not shown of the SITE GEOLOGY map, which they should as well. Based on my review, the sole geologic cross section is deficient and/or inaccurate in the following respects.

1. The contact between the Glen Ellen formation and the underlying Great Valley Sequence is shown as nearly flat, yet based on the relationship between the geologic contact shown on the map and the topography, the contact should be shown dipping at greater inclinations to the north to northeast. A mischaracterization such as this demonstrates incompetence, regardless whether or not the cross section is referred to as "schematic."

2. The orientation of bedding planes in the two bedrock units are not shown, and the actual inclination of the easternmost fault, which is described in the Report as a shallow easterly dipping shear/fault, is not accurately presented in the cross section. This is basic geologic data that a licensed professional geologist would present on a geologic map; hence, in my opinion, demonstrates negligence on the part of Mr. McCormick.

3. Not only is the location of the cross section inadequate as it relates to the any proposed building envelopes, which again are not shown on the map, but the 1 inch to 200 feet scale precludes appropriate representation of the various forms of landsliding in the project area with respect to the building envelopes. Given that landsliding is one of the major constraints to site development, the geologist should have presented a geologic map or at least a number of cross sections at a more appropriate scale. In my opinion, the omission of more definitive maps and cross sections with respect to landsliding falls below the standard of care for a licensed geologist.

4. The cross section identifies a fault by labeling it a FAULT near the southwestern edge of the section, but the other three faults are not labeled the same way (or) at all. It is unclear as to the significance of the labeled FAULT vs. unlabeled faults.

5. The geologic unit labeled Qc (Colluvium) on either side of the match line is incorrect, it should be labeled as QTge (Glen Ellen formation). This inaccuracy suggests the lack of a through, thoughtful review by Mr. McCormick.

As with all geologic studies of this kind, geologic cross sections serve as a basis for developing a geologic model that would be used in a variety of meaningful ways. Aside from the location of the active faults, the geologic information presented on Mr. McCormick's cross section is almost meaningless with respect to establishing viable building envelopes. In this particular case, the nature and extent of landslides, or the orientation of weak bedding planes or other adversely oriented structures (i.e. faults, shear zones, etc.) could be more thoroughly evaluated and proper mitigation measures developed with more definitive cross

sections. Properly constructed geologic cross sections for this project would also provide a reviewing geologist with a more thorough understanding of the mechanics of faulting, especially in the case of the easternmost active fault that appears to represent a low- to moderate-angle reverse or thrust fault.

- In the Report under the heading 3.3 FAULTING AND SEISMICITY, it states that "No faults were mapped in the area of the proposed residential or resort development on this site." However, when comparing Plate 3 - CONCEPTUAL DEVELOPEMNT PLAN with Plate 2- SITE GEOLOGY map, the surface trace of the reportedly east-dipping active fault that juxtaposes serpentinite with the Glen Ellen formation transects residential lot nos. 46, 47, and 48, located in the northwest corner of the site. This same conclusion is presented in section 8.2-SEISMAC HAZARDS, 8.3.2-Ground Surface Rupture on page 25 of the Report. Hence the statement that no faults were mapped in the residential devolvement area is inaccurate, and in my opinion, represents negligence on behalf the geologist.

  Moreover, given the particular nature of this fault (i.e. low to moderate east dipping reverse/thrust fault), and its proximity to the so-called residential building envelopes, it is my opinion that additional exploratory trenching is warranted to assess the actual width of the zone of faulting associated with this particular structure. In my experience, imbricate and/or antithetic faulting (i.e. back thrusting) in the hanging wall of these types of faults cannot be ruled out without exploratory trenching.

- On page 18 of the report it states that serpentinite, associated with the Franciscan Complex, exists west of the proposed residential development and no asbestosform minerals were observed. However, as with the fault discussed above that bound the serpentinite and Glen Ellen formation, serpentinite lies within residential lot nos. 46, 47, and 48. Moreover, on page 23 of the Report, under the heading 8.2.2-Serpentine, it states

that "…asbestos minerals may be present in this material." In my opinion, given that no laboratory testing was performed to assess the presence, or absence, of asbestoform materials, the actual threat to human health from these known carcinogenic materials cannot be adequately quantified. Therefore, in my opinion, the lack of a proper assessment for these hazardous materials represents a potential threat to public safety for which the licensed geologist is obligated to quantify. In my opinion, the lack of such an assessment by Mr. McCormick falls below the standard of care and constitutes negligence.

- Under section 8.2.4-Landslides, the Report states that "Several landslides have been identified locally on the site; [and] A few of the proposed building envelopes encroach near or cross the upper portions of a few of these landslides." In section 9.0-RECOMMENDATIONS, specifically section 9.1- BUILDING ENVELOPES, it states that "… the majority of the proposed building envelopes, shown on Plate 3, are considered geologic and geotechnically feasible as drawn." Based on my review of the SITE GEOLOGY map, there are a total of 22 landslides shown on the map, certainly more than just "several," many of which have developed on relatively steep natural slopes and at the heads of first order drainages. This section of the Report also provides mitigation recommendations (i.e. lateral shifting) for specific building envelopes that are either underlain by or encroach into a landslide. However, there are no slope stability analyses to support the mitigation recommendations, which are, in my opinion, unjustified and essentially ignore other aspects of potential slope instability (i.e. unsupported/daylighted bedding planes). This form of omission falls below the standard of practice for both the engineering geologist and the geotechnical engineer.

Based on the foregoing review, there are a number of inaccuracies and misrepresentations in the Report certified by Mr. McCormick that constitute negligence and/or incompetence, specifically

D. SCOTT MAGORIEN, C.E.G. 1290
Engineering Geologist

FROM : James R Winston FAX NO. : 707 433 2147 May. 14 2009 01:05PM P10

as it relates to presentation of basic geologic data, geologic interpretations, public safety and geologic hazards associated with slope stability and active faulting, and exposure to naturally-occurring asbestos materials.

Please call me with any questions or comments concerning the information presented herein.

Respectfully Submitted,

D. Scott Magorien, C.E.G. 1290
Principal Engineering Geologist

EXHIBIT 5

STATE OF CALIFORNIA
dca
DEPARTMENT OF CONSUMER AFFAIRS

Board for Geologists and Geophysicists
1625 North Market Boulevard, N-224
Sacramento, CA 95834
Telephone: (916) 574-7749
Fax: (916) 574-8811
Email: geology@dca.ca.gov
URL: www.geology.ca.gov

CITATION ORDER

Citation Number: CG 2007-52 Via Certified Mail

Date of Issuance: April 29, 2009

Respondent: William McCormick

Address: 1380 Windsor River Road
Windsor, CA 95492

Pursuant to Title 16, California Code of Regulations section 3063, the Board for Geologists and Geophysicists (hereinafter referred to as the "Board") is authorized to issue citations containing an order of abatement or an administrative fine against a professional geologist, geophysicist, or certified specialist who has committed any act or omission which constitutes a violation of the Geologist and Geophysicist Act or regulations. An order of abatement requires the cited person to cease the violation. An administrative fine may be assessed which requires the cited person to pay a monetary fine of up to $5,000 to the Board.

Citation

This citation is being issued to Mr. William McCormick in accordance with Business and Professions Code section 125.9 and section 3063 of Title 16 California Code of Regulations (CCR) for violation of Business and Professions Code section 7872(h) as described in the "Description of Violation." The Board hereby orders you to cease and desist from violating Business and Professions Code section 7860 and CCR, Title 16 section 3065, subdivision (b)(2), subdivision (c)(5) and subdivision (c)(9).

Administrative Fine

In compliance with Business and Professions Code section 125.9 and Title 16 CCR, sections 3063 and 3063.1, William McCormick is hereby ordered to pay an administrative fine in the amount of $2,500 for violation of section 7860 of the Geologist and Geophysicists Act and section 3065, subdivision (b)(2), subdivision (c)(5) and subdivision (c)(9) of Title 16, CCR.

Description of Violation

Board records show that on or about April 24, 1991 the Board issued William McCormick Professional Geologist (PG) license number 5022 and on or about October 31, 1991, certified Engineering Geologist (CEG) license number 1673. Said licenses have at all times relevant been in full force and effect and will expire on November 30, 2010.

William McCormick signed and sealed a report entitled "GEOLOGIC AND GEOTECHNCIAL INVESTIGATION SAGGIO HILLS, HEALSBURG, CALIFORNIA" (Report), dated October 29, 2004 as "William V. McCormick, C.E.G. 1673 Sr. Engineering Geologist/Geotechnical Mgr." for a proposed 254-acre development (Proposed Development) for 48 custom single-family homes and attendant driveways including approximately 14,000 lineal feet of proposed roadway improvements, 4,100 lineal feet of retaining walls, 21-acre resort and 2.6 acres identified for affordable housing in the City of Healdsburg, California.

Title 16 CCR section 3065 subdivision (b)(2)

According to Title 16 CCR section 3065 subdivision (b)(2) dealing with the competence of a professional geologist or professional geophysicist, "[w]hen practicing geology or geophysics, a licensee shall act with the competence and reasonable care, and shall apply the technical knowledge and skill which is ordinarily practiced by licensees in good standing, practicing in this state under similar circumstances and conditions."

The standard of practice for a licensed PG and CEG practicing in California is to provide accurate and complete site geologic hazard evaluation (e.g., environmental, landsliding, and faulting hazards) services appropriate for the scope of the project for which the licensee is retained.

The above-referenced Report by Mr. McCormick failed to meet the standard of care of a PG and CEG practicing in California by failing to present basic geologic data to support proposed cut slope and building envelope recommendations, by presenting incomplete and inaccurate geologic cross-sections,[1] and by failing to fully characterize asbestos-containing material hazards at the Proposed Development. Mr. McCormick also failed to accurately identify faulting hazards, to provide recommendations for safety setbacks from potential faulting hazards, and to adequately search existing pertinent reports and documents; thereby failing to recognize and identify past and possible future landsliding at the Proposed Development.

Title 16 CCR section 3065 subdivision (c)(5)

According to Title 16 CCR section 3065 subdivision (c)(5) dealing with misrepresentation in professional services by a professional geologist or professional geophysicist under similar circumstances and conditions, "A licensee shall only express professional opinions which have a basis in fact, are within the scope of the licensee's own experience or knowledge, and are generally accepted geologic or geophysical principles."

The standard of practice for a licensed PG and CEG practicing in California is to provide factual, accurate and complete site geologic hazard evaluation (e.g., environmental, landsliding, and faulting hazards) services appropriate to address public safety concerns for the scope of the project for which the licensee is retained.

In providing professional geologic and certified engineering geologic services for the Proposed Development Mr. McCormick failed to meet the standard of care of a PG and CEG practicing in California by failing express professional opinions that are based in fact and are generally accepted geologic principles when he failed to present basic geologic data and geologic interpretations regarding public safety concerns and geologic hazards associated with slope stability, active faulting, and exposure to naturally-occurring asbestos materials.

[1] As with all geologic studies of this kind, geologic cross sections serve a basis for developing a geologic hazard model for the site and therefore are a central and fundamental hazard characterization tool central to large developments with existing earthquake faulting and/or landsliding hazards.

Title 16 CCR section 3065 subdivision (c)(9)

According to Title 16 CCR section 3065 subdivision (c)(9) dealing with the competence of a professional geologist or professional geophysicist under similar circumstances and conditions, "A licensee shall not misrepresent data or its relative significance in any geologic or geophysical work product or oral conveyance of his or her professional opinion."

The standard of practice for a licensed PG and CEG practicing in California is to provide factual, accurate and complete site geologic hazard evaluation (e.g., environmental, landsliding, and faulting hazards) services based upon accurately represented geologic data to address public safety concerns within the scope of the project for which the licensee is retained.

Mr. McCormick misrepresented geologic data and its relative significance in his Report when he presented incomplete and inaccurate geologic data, geologic interpretations and failing to identify geologic hazards associated with slope stability, faulting, and exposure to naturally-occurring asbestos materials for the Proposed Development.

Title 16 CCR, section 3065, subdivision (b)(2), subdivision (c)(5) and subdivision (c)(9) makes it grounds for disciplinary action for any licensee to fail to act with competence and reasonable care while expressing opinions that have a basis in fact or experience in applying the technical knowledge and skill which is ordinarily applied by licensees of good standing and under similar circumstances and conditions.

Mr. McCormick committed acts of professional negligence, incompetence and/or misrepresentation constituting grounds for disciplinary action under Business and Professions Code section 7872(h) and section 7860 and for violation of section 7860 of the Geologist and Geophysicists Act and section 3065, subdivision (b)(2), subdivision (c)(5) and subdivision (c)(9) of Title 16 CCR.

Payment Information

This citation shall become a final order of the Board thirty (30) days after the date of issuance of this citation. Payment of the administrative fine is due thirty (30) days after the date of issuance of this citation unless appealed. Payment should be made payable to the Board for Geologists and Geophysicists, 1625 North Market Boulevard, N-324, Sacramento, California 95834. Please indicate your citation number on your check or money order.

Appeal

If you wish to appeal all or part of this citation, please complete the enclosed Notice of Appeal/Request for Informal Conference form and return it to the Board within thirty (30) days after the date of issuance of this citation.

Failure to return the Notice of Appeal - Request for Informal Conference form or submit other written request within the time indicated will waive your right to contest this citation.

If a hearing is not requested, the payment of any fine shall not constitute an admission of the violation charged. Where a fine is paid to satisfy an assessment based on the finding of violation, payment of the fine is publicly disclosed in forums such as the Board's website and newsletters and represented as satisfactory resolution of the matter [Business and Professions Code section 125.9(b)(4)].

George Dunfield
Assistant Executive Officer

4/29/09
Date

EXHIBIT 6

HABITAT INVENTORY AND INITIAL ASSESSMENT OF ANTHROPOGENIC SEDIMENTATION OF UPPER MARK WEST CREEK, SONOMA COUNTY, CALIFORNIA

PREPARED FOR:
New-Old Ways Wholistically Emerging
7768 St. Helena Road
Santa Rosa. California 95404

PREPARED BY:
STACY K. LI, PH.D.
AQUATIC SYSTEMS RESEARCH
1210 SPENCER AVENUE
SANTA ROSA, CALIFORNIA 95404
AND
DOUGLAS PARKINSON
DOUGLAS PARKINSON AND ASSOCIATES
960 L STREET
ARCATA, CALIFORNIA

JUNE 27, 2009

EXECUTIVE SUMMARY

- In October of 2008, Dr. Stacy Li and Douglas B. Parkinson ("We"), under contract with New Old Ways Wholistically Emerging (NOWWE), performed a Level IV Habitat Inventory of a section of upper Mark West Creek in Sonoma County California. The stream section inventoried begins at Tar Water Bridge and proceeds upstream to just past the confluence with the North Fork (NF) of Mark West Creek. The steelhead trout (*Oncorhynchus mykiss*) that inhabit this waterway are listed as *Threatened* under the Endangered Species Act of 1973 (ESA), and Mark West Creek has been designated as "critical habitat" for them. (A Level IV Assessment uses the most detailed classification of habitat types; It is used to describe stream habitat for baseline or assessment purposes).

- Coho salmon (*Oncorhynchus kisutch*) also inhabit Mark West Creek further downstream. They are listed as *Endangered* under the ESA. Mark West Creek has also been designated as Critical Habitat for coho salmon.

- California Department of Fish and Game (CDFG), made at least three salmonid abundance estimates between 1965 and 1970 in Mark West Creek. Those estimates included 60 steelhead and coho salmon per100 feet, 60 yearling steelhead per 100 feet and 175 steelhead per 100 feet. (California Department of Fish and Game, 2000). Bill Cox, CDFG district fisheries biologist for Sonoma and Marin counties, rated these salmonid abundances as very high.

- We found that Upper Mark West Creek (hereinafter "Creek") has been adversely affected by severe sedimentation. Although the creek is narrow, entrenched and steep-banked, it has the capacity to store a significant amount of sediment. This is particularly true when stream flows decline; almost 40% of the Creek habitat consists of flat-water (pools and runs) and another 40% consists of step-habitat with mostly flat-water. Because of the Creek's sediment storage capacity, it will typically take longer to transport and disperse this sediment load.

- The Creek banks consist mostly of boulders and bedrock walls. This means they are typically stable and, consequently, not a significant source of sediment. We also checked for tributary sediment contribution; we saw no significant sediment augmentation, except from NF Mark West Creek.

- There have been two anthropogenic (caused by humans) sediment spills from NF Mark West Creek into Upper Mark West Creek. A spill from the Minton property in 2004 created a debris dam and stored approximately 500 cubic yards of cobbles. This means the spill was at least that large.

A second, dramatically larger spill, originating from the Cornell Property, occurred during the rainy season of 2005-2006. One estimate of the spill size is 10,000 cubic yards of finer sediment. The sediment damage caused by this spill was compounded by the fact that the debris dam from the earlier Minton spill broke during the same season.

- The downstream edge of the Cornell sediment slug was identified at Station 1618; sedimentation ratings were much lower downstream from that station than upstream. All ratings of sedimentation within the sedimentation zone were heavy and severe, especially in the pool and step-pool habitats. Riffles that were inventoried had interstitial spaces clogged with sediment, but were relatively free of fines (tiny particles/fine particles). The downstream edge of the Cornell sediment within the Creek has traveled 4,020 feet in the past two rainy seasons; both these seasons have been drier than normal. However, adverse effects of the spill are still evident upstream at the confluence of NF Mark West Creek and Mark West Creek.

- The depth and area of embeddedness and percent surface fines in flat-water and step-habitats has resulted in higher adverse ratings than in riffles or cascades. Since fines were smaller than 2 mm, they were transported quickly. Most of the remaining sediment is composed of larger particles.

- SEDIMENTATION AND LOW STREAM DISCHARGE ARE MAJOR CONTRIBUTORS TO HABITAT DEGRADATION IN THE CREEK.

- At one point, the sediment supply was so large that deposits isolated the stream into five segments. This segmentation fractured the habitat; this in turn stopped fish movement, interrupted the stream's energy flow and undoubtedly reduced the supply of food for the fish. The passage of time and/or significant streamflows will be required before the sediment is dispersed; only then will the stream be restored to its pre-spill condition.

- Sedimentation is known to be a serious problem, and the mechanisms of its adverse effects have been studied for decades. "....After a half-century of the most rigorous research, it is now apparent that fine sediment, originating from a broad array of human activities (including mining), overwhelmingly constitutes one of the major environmental factors – perhaps the principal factor – in the degradation of stream fisheries." (Waters, 1995)

- Dr. Li examined the photographs of the Cornell sediment spill. There was high turbidity (having sediment suspended in solution) for at least 24 hours, which means that steelhead were likely killed (Newcombe and Jensen, 1996; Cluer and Li, 2005).

- The previously mentioned spill sediments have reduced fish living space by filling the habitat "units" in Upper Mark West Creek. Other known effects of this type of sedimentation include, but are not necessarily limited to:
    - Decrease in substrate roughness;
    - Reduced steelhead growth due to increased metabolic costs of maintain stream position;
    - Reduction in aquatic invertebrates that are fish food;
    - Decreased feeding efficiency;
    - Increased competition for food and space;
    - Increased rates of predation;
    - Increased susceptibility to parasites and disease;
    - Reduced stream access due to sediment blockage;
    - Increased incidence of stranding; and
    - Reduced production of steelhead.

- Steelhead spawning gravels in Upper Mark West Creek were extremely rare. We believe the anthropogenic sediment buried steelhead spawning gravels, which has resulted in less suitable spawning material and less suitable spawning locations. Entombing of alevins (newly hatched fry still living within gravels) trying to leave the gravels is also a common effect of sedimentation.

- Upper Mark West Creek is part of designated critical habitat for steelhead trout. More than 10,000 cubic yards of anthropogenic sediment have been washed into this narrow stream; this level of impact should qualify as adverse modification of critical habitat.

- **The threat of severe sedimentation to Mark West Creek and Upper Mark West Creek is not over.** The Cornell property has more stored sediments, with no adequate provision to isolate those sediments from the waterway. This means that there is an ongoing threat that a spill will happen again and cause further delay to the restoration of the waterway as a healthy, functioning steelhead habitat.

- The adverse impacts of sedimentation will not end once they disperse from Upper Mark West Creek. These sediments will continue to degrade Mark West Creek as they migrate downstream to where the endangered coho salmon are living and will continue to degrade habitat until they are dispersed in the Pacific Ocean.

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INTRODUCTION

Stacy K. Li, Ph.D. is experienced in habitat inventory methods and has delineated approximately 150 miles of streams in California, Oregon, and Nevada. New-Old Ways Wholistically Emerging (**NOWWE**), a community-based non-profit, retained Dr. Li to perform a stream habitat inventory assessment of upper Mark West Creek between Tar Water Road and the confluence with the North Fork (NF) Mark West Creek, a distance of about 1.1 miles. Upper Mark West Creek itself is a permanent third order stream within the Russian River Watershed in Sonoma County, California.

Dr. Li became familiar with upper Mark West Creek during his tenure at the National Marine Fisheries Service (NMFS), from which he retired on September 30, 2008. While an employee of the NMFS, Dr. Li visited upper Mark West Creek on two occasions. However, these visits were prior to a development caused landslide that resulted in 10,000 cubic yards of sediment entering upper Mark West Creek.

Douglas Parkinson, of Douglas Parkinson and Associates, Arcata, California, assisted Dr. Li in conducting the habitat inventory. Mr. Parkinson has delineated approximately 300 miles of streams in California, Oregon, Nevada, Washington, and Alaska.

BACKGROUND

Sonoma County's landscape is replete with steep ridges and canyons. Extensive land areas are landslide prone (Huffman and Armstrong 1980), and landslides are the most common type of ground failure in the County. As a result, all land development, especially in known landslide areas, must avoid actions that will cause the downslope movement of soil and/or rock materials (a landslide).

Increased land development within the Mark West Creek watershed has become of growing concern to those who value the natural assets of the creek. Already, due to heavy sediment loading, the Russian River watershed, of which Mark West Creek is a part, is listed as an impaired water body under Section 303(d) of the Clean Water Act (CWA). Upper Mark West Creek produces 17% of the sediment in the Laguna-Mark West watershed; it is the steepest creek with the highest level of natural erosion. This fact means that all development proposals (especially upslope activities) within proximity of upper Mark West Creek must be carefully evaluated to assure that there are no negative environmental impacts. It also means that regulatory agencies must be committed to assure that all laws, regulations, or ordinances protecting the waterway are followed and enforced.

Unfortunately, recent unauthorized and/or likely unauthorized land disturbing and property development activities on two different properties resulted in a large landslide and a series of sediment spills. These occurrences have increased sediment input into Mark West Creek far beyond natural sedimentation rates. They have seriously degraded

the steelhead habitat quality in upper Mark West Creek and will seriously degrade coho salmon habitat downstream, when the sediment reaches this habitat.
In 2004, spoils resulting from widespread and unauthorized grading activity on the Minton property, St. Helena Road, Santa Rosa, caused disturbed sediment to enter NF Mark West Creek, then move on to upper Mark West Creek. The sediment was subsequently stored as a debris dam in the vicinity of Station 4375 (this Inventory), until the following year. The amount of sediment stored within the debris dam was on the order of 500 cubic yards; it was mostly cobble-sized material and larger. During the winter of 2005-2006, this debris jam failed.

Compounding this, there was a landslide from the Cornell property on 245 Wappo Road, Santa Rosa. This landslide, most likely caused by an unauthorized fire break just upslope of the slide, washed thousands of cubic yards of slide material into NF Mark West Creek then into upper Mark West Creek. This began on 31 December 2005 and continued with each succeeding storm through spring of 2006. In addition, RGH Consultants (20 October 2006) reported that a landslide that occurred in April 2006 also transported sediments downhill to an intermittent flow ravine (NF Mark West Creek) and partially blocked the drainage. This landslide occurred in an area that had been disturbed by older, larger landslides. The estimated amount of slide material sent to the creek from the Cornell landslide was 10,000 cubic yards of silts, sands, and gravels (Keiran 2007). Instead of removing the landslide sediment from the ravine to prevent further sedimentation of Mark West Creek, a culvert was placed through the slide material within the drainage way and then material was mounded over the culvert. This inadequate provision will not keep these sediments from entering Mark West Creek.

THE FISH COMMUNITY

The fish community of Upper Mark West Creek consists of California roach (*Hesperoleucus symmetricus*), three spined stickleback (*Gasterosteus aculeatus*), steelhead trout (*Oncorhynchus mykiss*), and coastrange sculpin (*Cottus aleuticus*). This is a typical steelhead trout headwater fish community (Moyle 2001). Coho salmon (Oncorhynchus kisuch), has also inhabited Mark West Creek, but in the lower parts of the stream.

At least three fish abundance surveys were conducted by California Department of Fish and Game (CDFG). These occurred in July 1965, September 1969, and August 1970 (CDFG 2000). They estimated steelhead abundance at 175/100 feet of stream in 1965, 60 yearling steelhead/100 feet in 1969 and 60 steelhead and coho salmon/100 in 1970. Bill Cox, CDFG District Biologist for Marin and Sonoma counties, considered these abundances as very high (personal communication 2009).

Steelhead trout have been listed as threatened under the U.S. Endangered Species Act (ESA). The Central California Coast Steelhead distinct population segment (DPS) was listed as a threatened species under the Endangered Species Act (ESA) on August 18, 1997; the threatened status was reaffirmed on January 5, 2006 (71FR834).

This Steelhead DPS includes:

- All naturally spawned anadromous *Oncorhynchus. mykiss* (steelhead) populations below natural and manmade impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers;

- Tributary streams to Suisun Marsh including Suisun Creek, Green Valley Creek, and an unnamed tributary to Cordelia Slough (commonly referred to as Red Top Creek); and

- Excludes the Sacramento-San Joaquin River Basin, as well as two artificial propagation programs: the Don Clausen Fish Hatchery, and Kingfisher Flat Hatchery/Scott Creek (Monterey Bay Salmon and Trout Project) steelhead hatchery programs.

A final Critical Habitat designation was published on September 2, 2005 with an effective date of January 2, 2006 (70FR52488) and final revised protective regulations were issued for this DPS on June 28, 2005.

Coho salmon within the Central California Coast Evolutionarily Significant Unit (ESU) has been listed under the U.S. Endangered Species Act as endangered on 28 June 2005 (70FR37160). The Central California Coast ESU includes all naturally spawned populations of coho salmon from Punta Gorda in northern California south to include San Lorenzo River in central California, tributaries to San Francisco Bay excluding the Sacramento-San Joaquin system. Also included are four artificial propagation programs: the Don Clausen Fish Hatchery Captive Broodstock Program, Scott Creek/King Fisher Flats Conservation Program, Scott Creek Captive Broodstock Program, and the Noyo River Fish Station egg-take Program. A final designation of Critical Habitat was published on May 5, 1999 (64FR24049). The take prohibitions of section 9 of the ESA that may apply to this ESA were published on June 28, 2005 (70FR37160).

Streams vary in space and time. There are three climatological factors we considered that could affect the variability of physical conditions and recent steelhead/coho salmon abundance, or lack thereof. First, there have been two consecutive years below normal rainfall; therefore, there was less opportunity to transport the sediments we have mentioned previously. Second, the frost protection season of 2008 made unusually severe demands on the regional water supply. By its nature, frost protection represents a regional demand on water. When one vineyard, pear orchard, or almond orchard is diverting water to their irrigation system to protect their crops, all the neighboring farmers are doing the same. The consequent water demand is sudden and enormous. Steams such as Mark West Creek are very sensitive to frost protection activities because of their small discharges. During this past frost protection season, there are recorded instances where a small stream was dehydrated due to frost protection pumping. Federally endangered coho salmon were living in that small stream.

Even main stem rivers, such as the Russian River, were not immune to the adverse effects of frost protection diversions. Almost 40% of the flow on the Russian River, as recorded at the USGS gauge at Hopland, California, was diverted in April of 2008. This diversion dropped the water surface elevation over a foot and exposed a gravel bar to air, killing recently emerged steelhead fry. Third, the spring of 2008 was dry. Very little rain fell during the spring months, so flow recession to base-flow conditions occurred earlier.

METHODS

A) Two observers (Li and Parkinson) were used as a safety precaution. The observers walked upstream to minimize water clarity disturbance and methodically recorded observations in field books. The field data were entered into an Excel spreadsheet and reviewed for accuracy by both Li and Parkinson. These data are appended to this report on a compact disk.

By convention, a habitat inventory begins at the starting point with habitat unit one, with each succeeding habitat unit increasing by a single positive integer. The starting point for this survey was the Tar Water Bridge.

"Station" is the cumulative distance from the starting point. Station is measured using a hip chain (with precision to the nearest foot) and following the thalweg – the line of maximum depth of the stream. Hip chain string was tied frequently to local stream features to avoid shortening the measured station. Hip chain string was removed after measurement to prevent wildlife entanglement. We report Station as the number of feet upstream of Tar Water Bridge.

We followed three other habitat delineation conventions: 1) Since habitat units rarely transition from one to another with borders perpendicular to flow, the observer (Doug Parkinson) with the hip chain determined the most representative location for that border, typically the mean distance between the downstream edge of one and the upstream edge of the other. 2) In addition, U. S. Forest Service uses a minimum habitat unit length criterion. A habitat unit that is shorter than its stream width is lumped with the next upstream unit. This issue is particularly common in small streams such as Mark West Creek. 3) Orientation for left and right is looking downstream.

B) Habitat types were identified using published definitions (Overton *et al.* 1997) [Table 1]. We delineated habitat types at a Type IV, with the exception of identifying the source of scour for pools. Since habitat identification is based upon water surface appearance and water appearance varies with stream flow level, the habitat type proportions in this habitat inventory reflect low base-flow conditions.

Table 1. Habitat Type Definitions (Overton *et al.* 1991).

There are three general types of aquatic habitat:

1) **Flat-water habitats** are typically zones of scour during stream-flow increases and zones of sediment deposition when stream-flow decreases.

A **Pool** is a portion of the stream with reduced current velocity, often with water deeper than surrounding areas. Deeper areas are the result of scour. During periods of flow recession, pools are zones of sediment deposition.

A **Run** is deep and fast with a defined thalweg and little surface agitation; runs also become zones of deposition when stream velocity in the run becomes slow. Sediment deposition occurs later than sediment deposition in pools.

2) **Falling-water habitats** are zones of deposition during periods of increasing stream-flow and zones of substrate erosion during stream-flow recession.

A **Riffle** has shallow rapids where the water flows swiftly over completely or partially submerged obstructions, producing surface agitation, but standing waves are absent. Riffles typically have a consistent slope. Two types of riffles are identified – **Low Gradient Riffles (LGR)** are less than 4% slope and **High Gradient Riffles (HGR)** are steeper than 4% slope.

A **Cascade (CAS)** has swift current, exposed rocks and boulders, high gradient, and considerable turbulence, surface agitation, and consists of a series of drops. A synonym for cascade is cataract.

3) **Flat-water within falling-water habitats**. These habitat types do not have a consistent slope within the units. Habitat consists of flat-water with vertical gradient loss at steps. The relationship between rising and falling hydrology and sediment transport is very complex, with some parts of the habitat behaving as flat-water and other parts behaving as falling-water.

A **Pocket pool (POC)** is small (between 10 and 30 percent of wetted width); bed depressions form around channel obstructions within fast water habitats only. A synonym for pocket pool is pocket-water.

A **Step-run (SRUN)** is a series of runs with gradient breaks in between.

A **Step-Pool (SPOOL)** is a complex and has a series of three or more mid-scour pools separated by short turbulent water. The length of the turbulent water cannot exceed the average wetted width. Step pool complexes are found in headwater channel types and typically consist of pools that are formed by boulders and bedrock.

Step pocket pool (SPOP) is a series of pocket pools with gradient breaks in between.

C) We used a wading staff graduated in feet and tenths of feet to measure:

- Stream width from wetted edge to wetted edge; Parkinson viewed both banks and measured the typical width.
- Mean depth, based upon multiple measurements in each habitat unit.
- Maximum depth of pools and step-pools.
- The hydraulic control of each pool or step-pool, i.e., the elevation that determines the standing pool when flow ceases.
- Parkinson estimated the steelhead spawning gravel area within each habitat unit. We used the >8 mm to 64 mm size criterion as steelhead spawning gravel (Kondolf and Wolman 1993).

D) Global Positioning System (GPS)

- Parkinson used a Garmin™ GPSmap 60CSx to take GPS periodic readings.

E) Visual estimates:

- Parkinson used a Pentax™ Optio W30 to photograph stream features of interest.
- We measured local gradient periodically using a clinometer and also estimated grade, based on experience.
- Parkinson visually estimated **depth of embeddedness** (how deeply the rocks are buried at the tails of the units)[Table 2]. The depth of embeddedness is related to the degree of sedimentation and its effect on steelhead spawning conditions and aquatic invertebrate production. The more the rocks are buried by sediment, the less suitable it is for steelhead spawning and aquatic invertebrate production. The most apparent visual indication of sedimentation is the degree to which space between substrate rocks is filled by smaller sediment particles.

Table 2. Depth of Embeddedness Codes

Code	Criterion	Condition
0	None	Sediment absent, interstitial space open
1	1-25%	Light – sediment present, but interstitial space open
2	26-50 %	Moderate – significant clogging of interstitial space
3	51-75%	Heavy – interstitial space filled
4	76-100%	Severe – substrate rocks almost buried

- Parkinson visually estimated the percent surface fines within each habitat unit (Table 3). Fines are smaller (<2 mm) substrate particles that typically clog the space between the dominant substrate and reduce hydraulic roughness to the

substrate's profile. Others have used particles as large as 8 mm as fines. Percent surface fines estimates the area within a habitat unit affected by fine sedimentation.

Table 3. Percent Surface Fines

Percent	Condition
None	Clean
1-25%	Light
26-50%	Moderate
51-75%	Heavy
76-100%	Severe

- Parkinson used the Wentworth substrate size classes to describe substrate (Table 4). Dominant substrate was the most abundant area in the habitat unit and subdominant rocks are the second most abundant area in the habitat unit.

TABLE 4. WENTWORTH SUBSTRATE SIZE CLASSIFICATION

Substrate Size Code	Description	Size in inches	Rough Equivalent Metric sizes
01	Organic		
02	Silt/Clay	<0.1	<1
03	Coarse Sand	0.1 to 0.2	2-4
04	Small Gravel	0.2 to 1	4-32
05	Medium Gravel	1 to 2	32-64
06	Large Gravel	2 to 3	64-90
07	Small Cobble	3 to 6	90-128
08	Medium Cobble	6 to 9	128-256
09	Large Cobble	9 to 12	256-300
10	Small Boulder	12 to 24	300-600
11	Large Boulder	>24	>600
12	Bedrock		

- Li made **Habitat Quality** assessments. These are visual evaluations of the physical interaction between streamflow, depth, velocity, cover, and substrate conditions (Kelley and Dettman 1980). David Dettman and/or Li used this technique to great success on the Carmel River, Lagunitas Creek, Soquel Creek, Zayante Creek in California, and the Tucannon River in Washington. Substrate roughness is the primary consideration of habitat quality in habitats with stream current. A rough substrate means a tall boundary layer near the substrate surface that provides a low stream velocity when water flows over it (Gordon *et al.* 1992).

This reduces a fish's energy expenditure while holding the feeding location (station) (Fausch 1984). The best substrate size for bed roughness for young-of-the-year steelhead is cobble; gravel is too small to create adequate roughness, and boulder is too large and becomes smooth to streamflow.

The best substrate size for benthic aquatic invertebrates is also cobble because sand or gravel are unstable and too small to provide optimal space, and boulder is too large and becomes smooth to streamflow. (Only specialized organisms adapted to laminar flow, such as black flies (Simuliidae), can live on boulders [Hydrozoology1981 The adverse effect of sediment deposition is a reduction of the roughness of substrate surface, which reduces boundary layer height, increases steelhead energy expenditure to maintain station, and/or reduces living space. A rough substrate will not have sediment clogging the space between rocks. Open interstitial space is required for high aquatic invertebrate production (Waters 1995). In addition, there should be sufficient current to deliver drift for fish to eat. Good in–stream cover also increases fish abundance. Habitat Quality is ranked in five grades, No habitat, poor, fair, good, and excellent. No habitat is given the value of zero and poor habitat is given the value of one. With each subsequent increase in habitat quality, the habitat grade doubles in value, thus, fair habitat is graded with a two and good habitat is graded with a four. The highest rated habitat, excellent habitat, is given the value of eight.

- Li described **primary bank components** in each habitat unit for both banks (left and right).

- Li described **bank slope** for both banks using a 30/60 right triangle as a reference. This is a rapid estimate intended to indicate relative steepness; it is not accurate to the nearest degree.

- Li rated **bank stability** for each bank within each habitat unit using criteria adapted from Platts *et al.* (1983) [Table 5].

Table 5. Bank Stability Code (Adapted from Platts et al. 1983).

Code	Criterion	Condition
1	0-25%	Streambank is stable; less than 25% is receiving any kind of stress; stress is light.
2	26-50%	At least 50% of the streambank is in a natural stable condition.
3	51-75%	Less than 50% of the streambank is in a natural stable condition.
4	76-100%	Less than 25% of the stream bank is in a stable condition.

- Li ranked Area Embeddedness within each habitat unit (Table 6). Area embeddedness is the degree to which dominant substrate is affected by finer

substrate. This assessment is similar to percent surface fines, but is not limited to the fine size (<2 mm) category.

Table 6. Area Embeddedness Code

Code	Criterion	General Condition
0	None	Clean substrate – No sediment in habitat unit.
1	1-25%	Light – Sediment deposited only at edges of boundary.
2	26-50%	Moderate – Sedimentation apparent.
3	51-75%	Heavy – Habitat and food production greatly reduced.
4	76-100%	Severe - Habitat filled in and marginal.

- Observations of biological or fluvial geomorphological significance were noted.

RESULTS

REACH COMPARISONS

The habitat inventory survey occurred under late season low flow conditions on October 20, 21 and 30, 2008. Flow conditions remained essentially the same with streamflow estimated at 0.1 cubic feet per second (cfs).

Li and Parkinson assessed 6163 lineal feet of Mark West Creek from the Tar Water Bridge upstream just past NF Mark West Creek; this represented 154 habitat units between October 20 and October 30, 2008 (Table 7). The 10,000 cubic yard sediment release from the Cornell landslide has a significant effect on habitat conditions in the surveyed reach of upper Mark West Creek. There were four units that were dry; this was caused by excessive sediment deposition. Because they are dry, they cannot be identified as aquatic habitat.

Flat-water habitat types represented almost 39% of the portion of Mark West Creek we surveyed. Less than 20% was represented by falling-water habitat types and over 40% of the reach was represented by some form of flat-water within a falling gradient habitat type (Table 8). Therefore, over 79% of the reach is subject to sediment deposition during the recessional limb of the annual hydrograph.

Table 7. Summary of the habitat units and their frequency of occurrence during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008

Habitat Type	Frequency (number)	Cumulative Length (feet)	Mean Length (feet)	Mean Width (feet)	Mean Depth (feet)
Pool	045	2287	52.87	9.67	0.95
Run	003	0096	32.00	5.00	0.45
LGR	024	0727	30.79	3.41	0.27
HGR	017	0385	22.65	2.44	0.26
Cascade	011	0107	09.73	2.45	0.16
Pop	003	0130	43.33	3.83	0.50
Step-pop	009	0442	49.11	4.89	0.58
Step-run	011	0602	54.74	5.45	0.44
Step-pool	026	1330	51.15	6.48	0.99
DRY	004	0057	14.25	NA	0.00
Totals	154	6163	40.02	5.74	0.61

Table 8. Summary of habitat type proportions during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Flat-water habitats = 38.67%
- Pool = 37.11%
- Run = 01.56%

Falling water habitats = 19.78%
- Low Gradient Riffle = 11.80%
- High Gradient Riffle = 06.25%
- Cascade = 01.74%

Flat-water within falling gradient habitats = 40.63%
- Pocket Pool = 02.11%
- Step-pocket pool = 07.17%
- Step-run = 09.77%
- Step-pool = 21.58%

We developed a preliminary relative elevation profile based upon periodic gradient measurements and estimates of gradient (Figure 1). The stream has a consistent gradient between 3% and 4%.

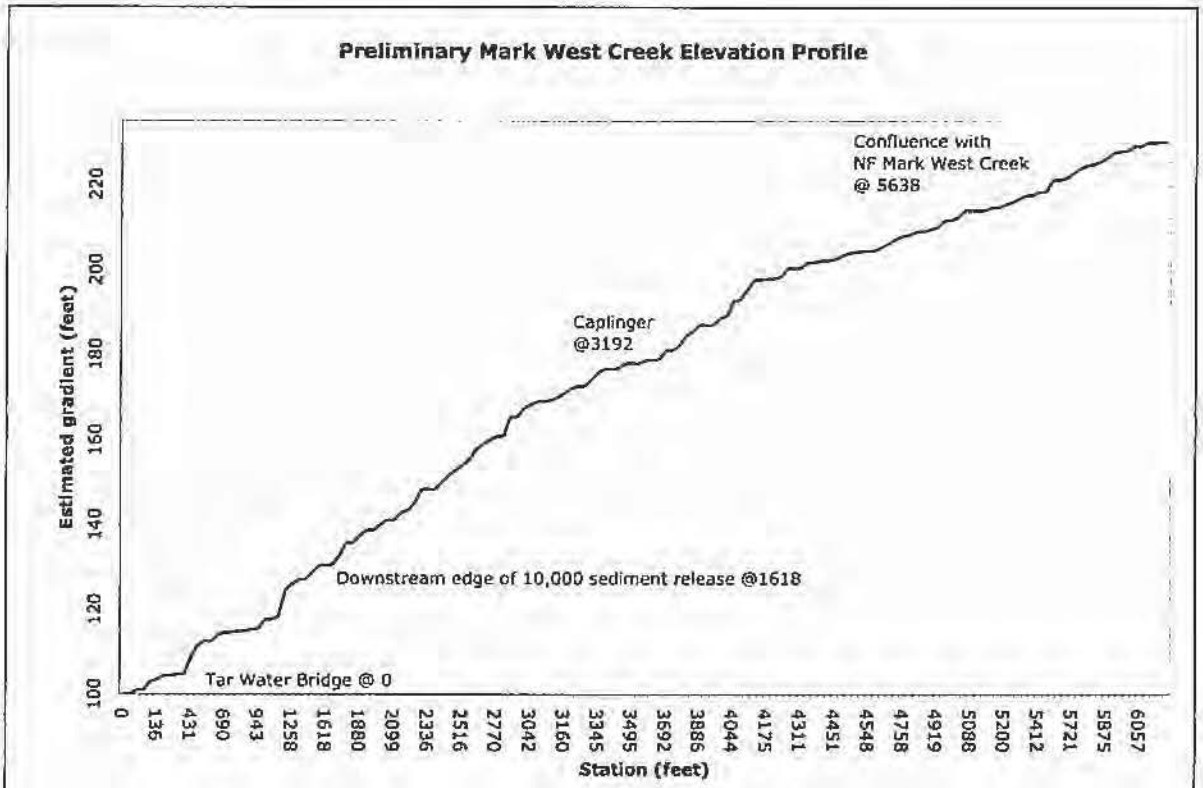

Figure 1. Initial elevation profile of upper Mark West Creek from Tar Water Bridge to upstream of NF Mark West Creek, October 2008.

We found evidence of the 10,000 cubic yard sediment release from its origin (Station 5638) into Mark West Creek 4020 feet downstream from confluence with NF Mark West Creek downstream to Station 1618 of this habitat survey. There were differences in the color of the released sediment and the stream substrate. There was a noticeable increase of boulder wakes. Boulder wakes are depositions of sediment caused by lack of stream velocity. Boulder wakes are indicative of high sediment loading. Stoss occurred. Stoss is an accumulation of a few coarse particles on the upstream side of a large particle (e.g. boulder); it is formed when a large obstacle comes to rest and one or more particles lean against the upstream side of it. Stoss occurs more commonly when sediment supply is high. We also made the unusual observation that substrate was higher in sediments upstream of the slide than downstream

Due to the size of the sediments Depth of Embeddedness was highest in DRY habitats. Step-habitats had higher me an embedded depths than runs, riffles, cascades, or pools. Cascades were low in embeddedness due to their higher gradients (Table 9).

Table 9. Depth of Embeddedness in the different habitat types during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat Type	Mean Embedded Depth
Cascade	0.62
High gradient riffle	0.99
Low gradient riffle	1.00
Run	1.00
Pocket pool	1.00
Step-pool	1.13
Step-run	1.31
Step-pocket pool	1.43
Pool	1.49
Dry	4.00

Percent Surface Fines in each habitat unit were multiplied by its length so that their presence would be weighted by representation. Length was used as the affected parameter, rather than area, because it is more accurate; it is measured only once while width and depth require multiple measurements. Dry, Pool, and Step-pool habitats were the most adversely affected by fine sediment (Table 10).

Table 10. Effect of percent surface fines on habitat during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat Type	Cumulative length fines weighted by length	Mean Percent affected by sediment
Cascade	002.79	002.61%
Pocket-pool	003.90	003.00%
High gradient riffle	012.65	003.29%
Low gradient riffle	025.30	003.48%
Step-pocket pool	036.32	008.22%
Run	009.92	010.33%
Step-run	074.09	012.31%
Step-pool	270.30	020.32%
Pool	927.40	040.55%
Dry	0	100.00%

We measured maximum depth and hydraulic control of each pool and step-pool to develop a preliminary residual pool depth analysis (Lisle and Hilton 1992) [Table 11]. Normally, such an index is used to monitor some activity that generates sediment and baseline conditions are pre-project. In this case, the residual pool depth index can be used to monitor the progress of returning upper Mark West Creek to an undisturbed state.

Table 11. Preliminary Residual Pool Depth Index (Lisle and Hilton 1992) based pools and step-pools in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat Type (definition)	Frequency (n)	Mean Maximum Depth (feet)	Mean Hydraulic Control Control (feet)	Mean Residual Pool Depth (feet)
Pool	45	2.04	0.13	1.91
Step-pool	26	1.31	0.13	1.13

We developed mean area embeddedness for each habitat type that was weighted by length (Table 12).

Table 12. Mean area embeddedness for each habitat type during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat Type	Mean Area Embeddedness
Run	1.63
Cascade	1.51
High gradient riffle	2.11
Low gradient riffle	2.35
Step-pocket-pool	2.80
Pool	2.91
Spool	3.17
Step-run	3.20
Pocket-pool	3.52
Dry	4.00

The amount of steelhead spawning gravel area was low (Table 13).

Table 13. Surface area of steelhead spawning gravels by habitat type during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat Type	Spawning Gravel Area (square feet)	Cumulative Area Area (square feet)	Percent of Habitat Type (percent)
Pool	327	23353	1.40
Run	007	00510	1.37
Low gradient riffle	066	2649.2	2.49
High gradient riffle	000	0932.5	0
Cascade	000	0214	0
Pocket-pool	000	0519	0
Step-pocket-pool	000	2229.5	0
Step-run	005	3265.5	0.15
Step-pool	045	8869.5	0.51
Dry	000	No water	0.0

Habitat quality was mostly poor to fair. Step-pocket pool and Step-pools were fair. Pools were fair to good (Table 14).

Table 14. Summary of habitat quality weighted by representation during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat Type	Cumulative Quality x length	Mean Quality	Habitat Grade
Pool	7774	3.40	fair to good
Step-pocket-pool	0955	2.16	fair
Step-pool	2793	2.10	fair
Run	0172	1.79	poor to fair
Pocket-pool	0228	1.75	poor to fair
Low gradient riffle	1225	1.69	poor to fair
Step-run	0972	1.61	poor to fair
High gradient riffle	0615	1.59	poor to fair
Cascade	0069	0.64	poor
Dry	0000	0.00	none

1. POOL SUMMARY

Pools are typically deep habitats with slow stream velocity (current). They collect sediments after the rain season and are deepened by scour from seasonal storms. Because their stream velocities are typically slow, the effect of sediment on substrate roughness is not as meaningful. However, sedimentation does adversely affect pools since deposition causes a reduction in their living space.

Pools were the dominant flat-water habitat in upper Mark West Creek. They were the most abundant habitat type in frequency or cumulative length. Pools were one of the longer (mean 52.87 feet), and deeper (mean 0.95 feet) habitat types. They were wider than any of the other habitats (mean 9.67 feet), and were also the deepest (2.2 feet), based on maximum depth measurements in pools and step-pools. Pools occurred throughout the surveyed reach from Tar Water Bridge upstream beyond the confluence with NF Mark West Creek (Figure 2). Pools had 19 different substrate combinations that ranged in size from sand to bedrock, reflecting the depositional character of pools during low streamflow conditions. Pools provide living space for steelhead, but do not produce much fish food. This lack of food production occurs because the invertebrates that live in pools are within the substrate and generally unavailable. In addition, the majority of aquatic invertebrates normally used as fish food require current to exist.

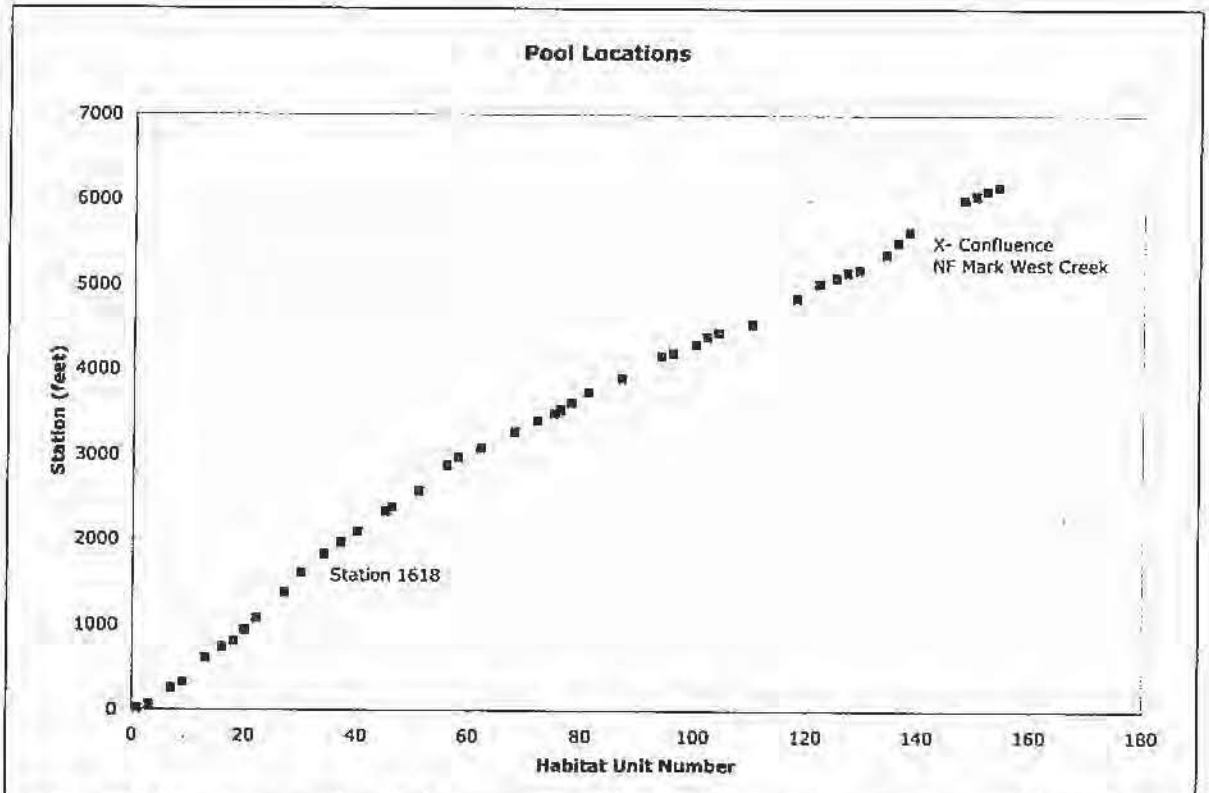

Figure 2. Occurrence of pools between Tar Water Bridge to just upstream of North Fork Mark West Creek in Mark West Creek, Sonoma County, California, October, 2008.

There were 19 different dominant/subdominant substrate combinations observed, ranging from bedrock to coarse sand for the dominant substrate. The most frequent was coarse sand and small gravel, which also covered the most pool length (Wentworth 3/4).The same size classes were in the 10,000 cubic yard sediment release (Table 15).

Table 15. Pool substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)	Percent Larger Than
12/10	03	0088	003.58	03.58
12/7	01	0018	000.79	04.37
12/4	02	0053	002.32	06.69
11/3	01	0044	001.92	08.61
10/9	02	0105	004.59	013.20
10/7	01	0039	001.71	014.91
10/6	01	0040	001.75	016.66
9/10	01	0032	001.40	018.06
9/7	01	0056	002.45	020.51
9/4	01	0033	001.44	021.95
8/10	01	0098	004.29	026.24
7/9	01	0035	001.53	027.77
5/3	01	0071	003.10	030.87
4/10	02	0063	002.75	033.62
3/12	03	0196	008.57	042.19
3/10	03	0208	009.09	051.28
3/5	01	0040	001.75	053.03
3/4	18	0989	043.24	096.27
3/1	01	0079	003.45	100.00
Totals 19 = n	45	2287	100.00	

Pool banks were stable (Table 16); only 5.12% of the length and 6.67% by frequency had unstable ratings.

Table 16. Pool bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank Rank (Code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1/1	37	082.22	1831	080.06
1/2	06	013.34	0307	013.42
2/2	01	002.22	0032	001.40
4/2	01	006.67	0117	005.12
Totals 4 = n	45	100.00	2287	100.00

The largest component of the banks (combined at 47.77% frequency and 59.33% length), was bedrock, followed by boulder (combined at 45.54% frequency and 36.75% length) (Table 17). There was one observation with bedrock, boulder, and rootwads. Half of that observation was assigned to bedrock/boulder and the other half to bedrock/rootwads.

Table 17. Pool bank components, during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	08	017.78	0439	019.20
Bedrock/Boulder	06.5	014.44	0275.5	012.05
Bedrock/Redwood	01	002.22	0056	002.45
Bedrock/Rootwads	03.5	007.78	0159.5	006.97
Bedrock/Cobble	04	008.89	0173	007.56
Bedrock/Gravel Bar	02	004.44	0191	008.35
Bedrock/Vegetation	01	002.22	0063	002.75
Boulder,trees/Boulders,trees	03	006.67	0124	005.42
Boulders/Boulders	05	011.11	0134	005.86
Boulders, trees/Rootwads	01	002.22	0043	001.88
Boulder, roots/Cobble, roots	01	002.22	0098	004.29
Boulder, trees/Vegetation	01	002.22	0071	003.10
Boulder/Log	01	002.22	0024	001.05
Boulder/Gravel Bar	02	004.44	0071	003.10
Hardpan/Hardpan	01	002.22	0081	003.54
Cobble/Rootwads	01	002.22	0059	002.59
Vegetation/Vegetation	02	004.44	0107	004.68
Trees/ Slide Toe	01	002.22	0117	005.12
Totals 18 = n	45	100.00	2287	100.00

Depth of embeddedness was light to moderate in pools (Table 18). There was one observation where we could not discern whether the code was a 2 or a 3, so we assigned a value of 2.5.

Table 18. Pool depth of embeddedness during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Depth of Embeddedness (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)	Weighted Length Mean
1	28	062.22	1236	054.04	1236
2	15	033.33	0919	040.18	1838
2.5	1	002.22	0112	004.90	0280
3	1	002.22	0020	000.87	0060
Totals 4 = n	45	100.00	2287	100.00	3414 1.49

There were 26 different combinations of bank slope associated with pools. Two out of three bank pairs (left and right) had a slope of at least 45°. Slopes of the pool banks were steep (Table 19).

Table 19. Pool bank slopes during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank Slope Angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
90/90	04	0175	007.65
90/80	03	0191	008.35
90/70	01	0073	003.19
90/45	02	0088	003.85
90/30	01	0079	003.45
90/15	01	0045	001.97
90/10	01	0012	000.52
90/5	05	0258	011.29
90/2	01	0040	001.75
90/1	02	0152	006.65
85/80	01	0015	000.66
80/5	01	0067	002.93
80/2	01	0061	002.67
60/45	02	0092	004.02
45/45	01	0081	003.54
45/30	02	0035	001.53
45/2	01	0063	002.75
45/1	01	0037	001.62
30/20	01	0056	002.45
20/10	01	0117	005.12
15/10	01	0050	002.19
15/5	01	0019	000.83
10/5	02	0137	005.99
5/5	01	0032	001.40
5/1	02	0157	006.86
1/1	05	0155	006.78
Totals 28=n	45	2287	100.00

The area of most pools was heavily embedded (Table 20).

Table 20. Proportion of pool area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

Rank (code)	Frequency (Number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)	Mean
1	09	020.00	0500	21.86	
2	05	011.11	0288	12.59	
3	08	017.77	0422	18.45	
4	23	051.11	1077	47.09	
Totals	45	100	2287	100	2.91

One third of the pools and over 70% of the weighted length of pools had at least 70% of their surface area covered with fines. The value 0.03 was used for the <5% rating (Table 21).

Table 21. Distribution of percent surface fines in pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.03	09	020.00	0402	017.58	012.06	001.30
0.05	01	002.22	0086	003.76	004.30	000.46
0.10	07	015.56	0267	011.67	026.70	002.88
0.15	04	008.89	0125	005.47	018.75	002.02
0.20	01	002.22	0059	002.58	011.80	001.27
0.30	03	006.67	0248	010.84	074.40	008.02
0.40	02	004.44	0118	005.16	047.20	005.09
0.50	01	002.22	0044	001.92	022.00	002.37
0.60	02	004.44	0086	003.76	051.60	005.56
0.70	04	008.89	0239	010.45	167.30	018.04
0.75	03	006.67	0149	006.52	111.80	012.05
0.80	05	011.11	0318	013.90	254.40	027.43
0.85	02	004.44	0126	005.51	107.10	011.55
0.90	01	002.22	0020	000.87	018.00	001.94
n = 14	45	100.00	2287	100.00	927.40	100.00

Mean Percent Weighted Length = 40.55%

Pool areas were relatively free of sediment downstream of Station 1618 and were more highly embedded thereafter in the upstream direction (Figure 3).

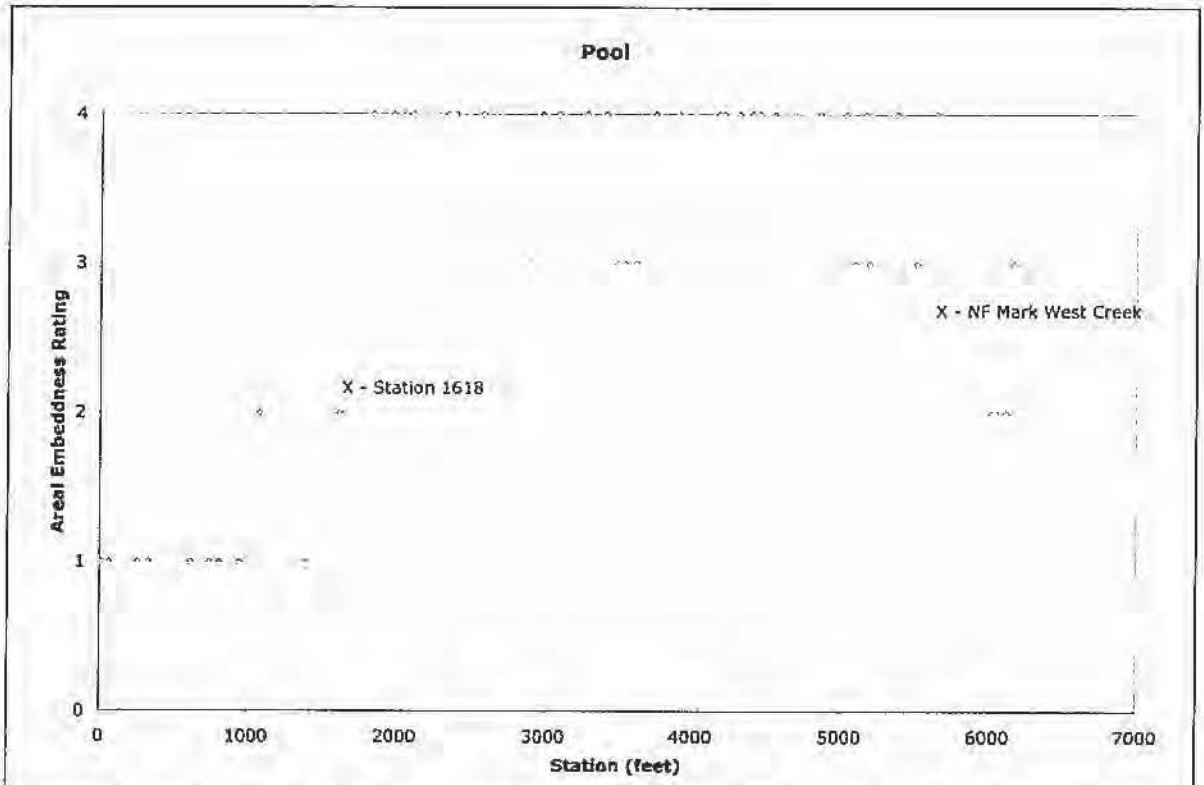

Figure 3. Longitudinal profile of area embeddedness in pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

The percent of surface fines in pools was lower prior to Station 1618 and was higher thereafter in the upstream direction (Figure 4).

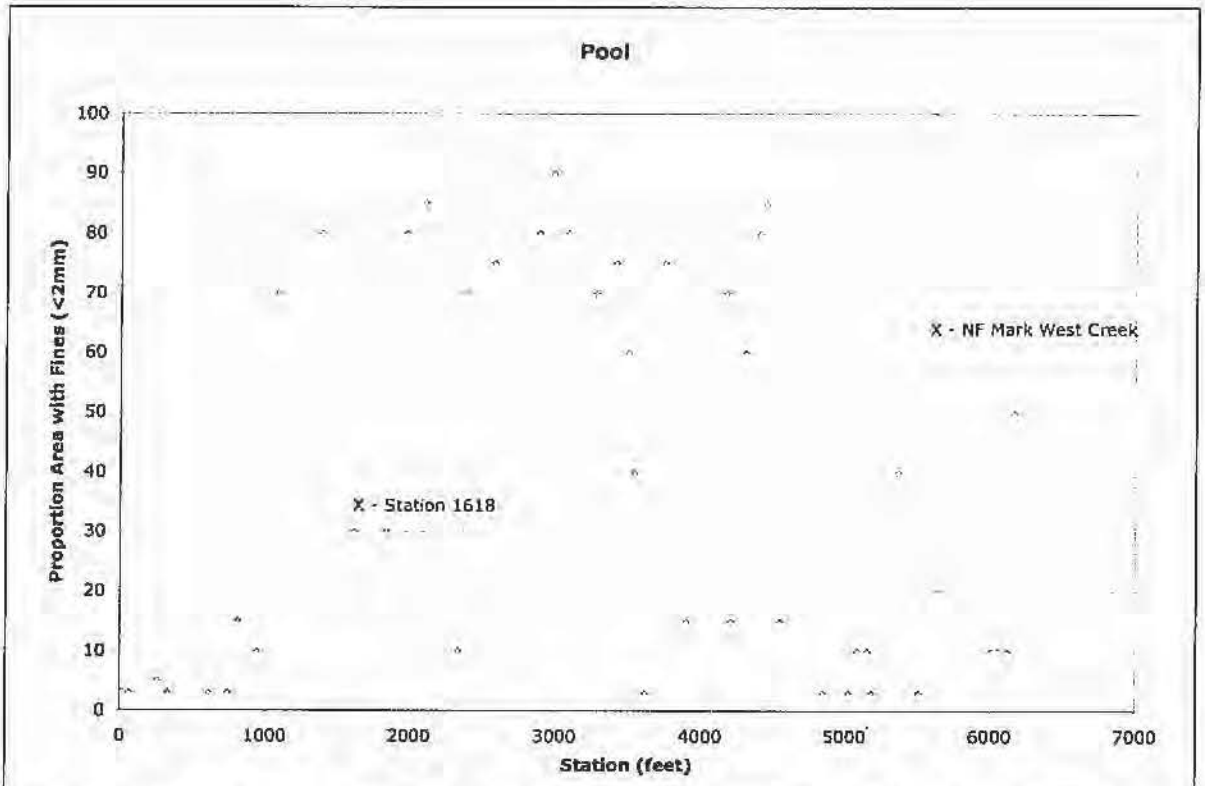

Figure 4. Longitudinal profile of percent surface fines in pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008

There was an increase in embeddedness depth in pools from station 1000 to station 5000 (Figure 5).

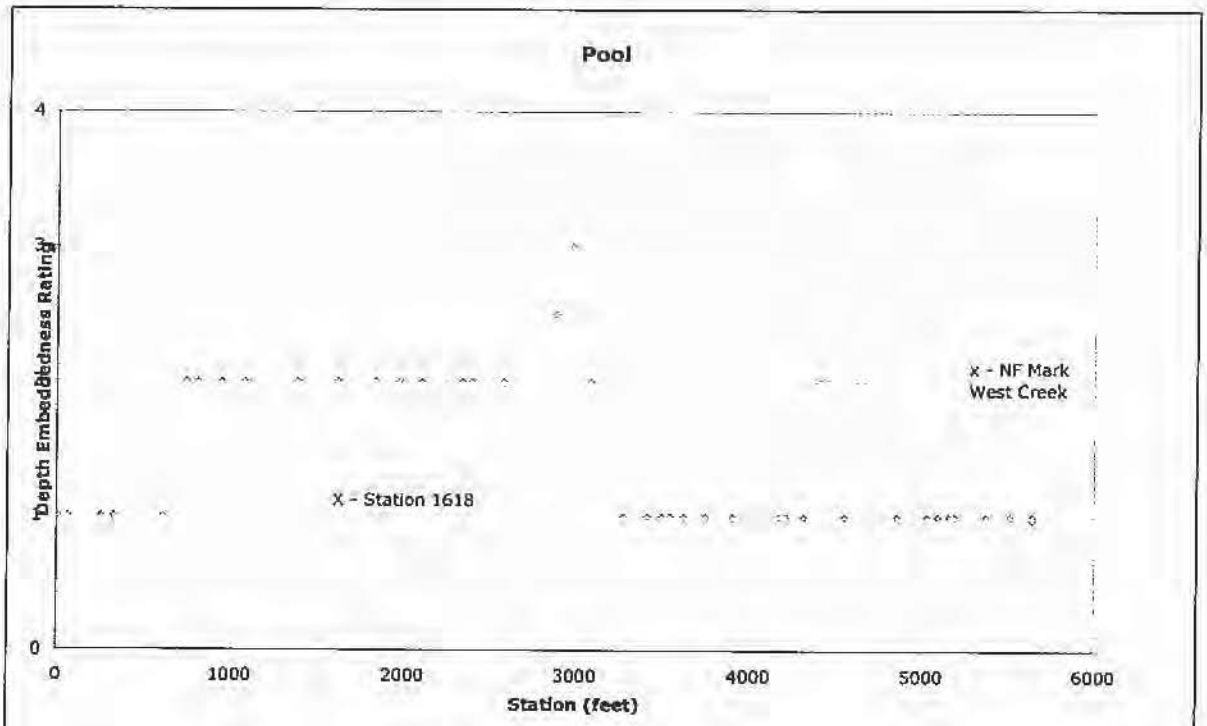

Figure 5. Longitudinal profile of depth embeddedness ratings in pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat quality for pools was fair to good (Figure 6). There were some excellent habitat ratings within the sediment slug (upstream of station 1618). The adverse effects of sediment in pools are delayed until the living space is filled up.

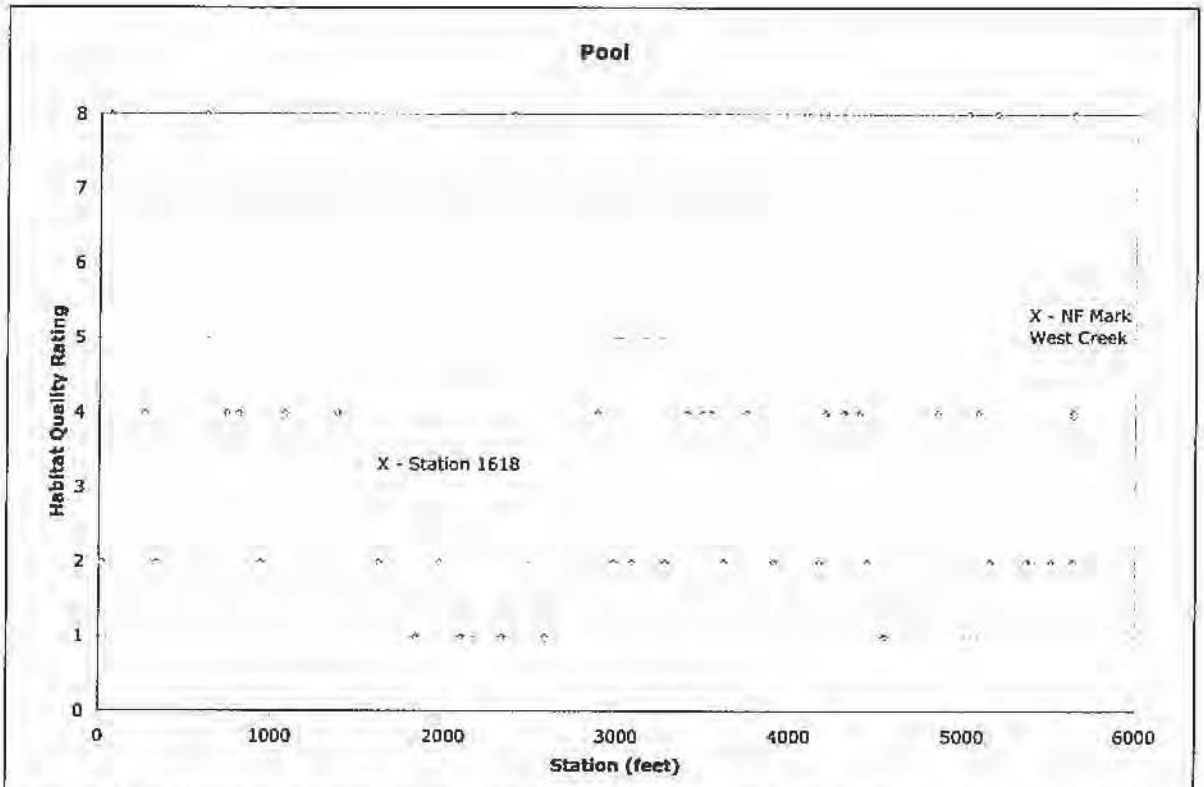

Figure 6. Longitudinal profile of habitat quality ratings for pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

2. STEP-POOL SUMMARY

A step-pool is a series of pools with vertical gradient breaks between the pools. The pools must be longer than the gradient breaks. It is the immediate vertical loss of elevation at the gradient breaks that allows flat-water habitat to occur within an area of sloping gradient. The flat-water portions of this habitat type are sensitive to sediment deposition during the recessional limb of the hydrograph, *i.e.,* the period of declining streamflow level. The most significant adverse effect of sedimentation is loss of living space, although there is can be loss of food production. A Step-pool is the most frequently occurring flat-water habitat within a sloping gradient in upper Mark West Creek. Step-pools are similar to pools. Like pools, they are relatively longer (Mean 51.15 feet) and relatively deeper (mean 0.99 feet) than other habitat types. Except for pools, step-pools are the widest habitat type (Mean 6.48). As habitat types, step-pools were second in depth (1.31 feet). Step-pools are less scoured in profile than pools; their mean depths were greater than pools, but their maximum depths were less. Typically, they have faster stream velocities than pools. Step-Pools occurred throughout the surveyed reach from Tar Water Bridge upstream beyond the confluence with NF Mark West Creek (Figure 7). There were 18 different substrate combinations; they ranged in size between sand and bedrock. Fish food may be produced in step-pools, provided there is some current moving through them.

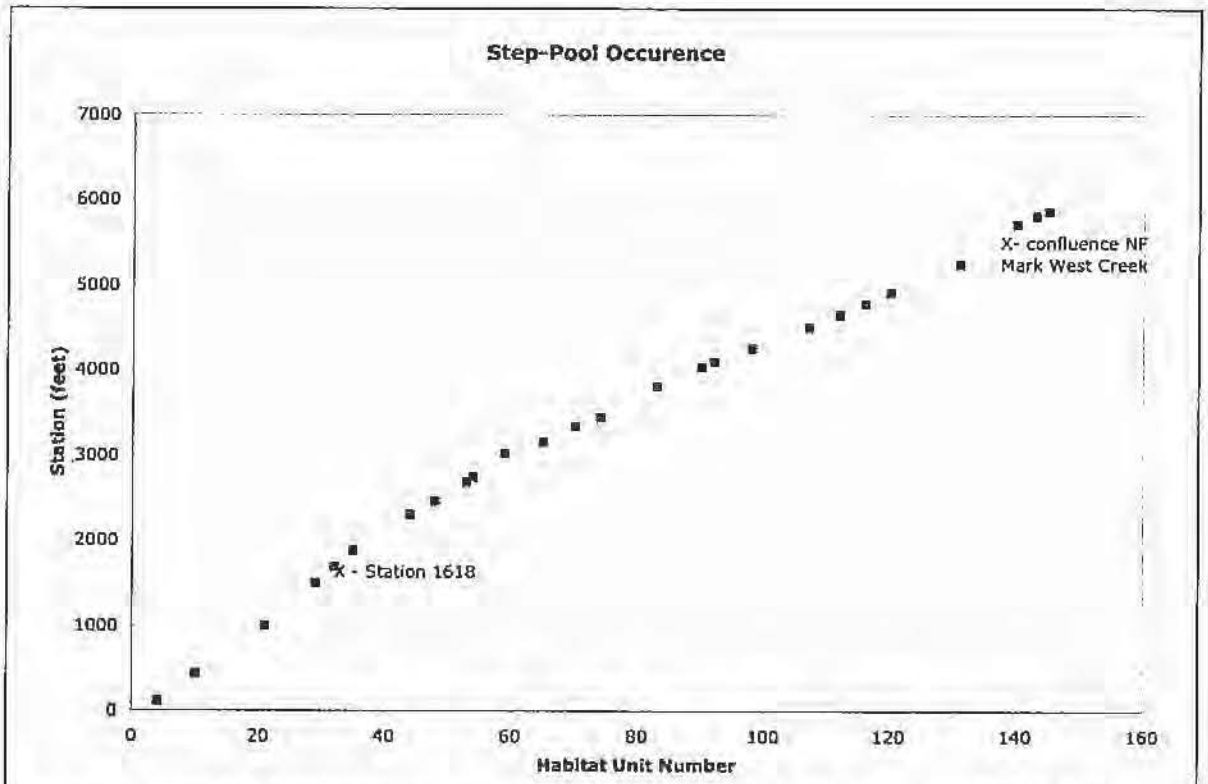

Figure 7. Step-pool occurrence from Tar Water Bridge to just upstream of NF Mark West Creek in upper Mark West Creek, Sonoma County, California, October 2008.

There were 18 different combinations of substrate for step-pools (Table 22).

Table 22. Step-Pool substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)	Percent Larger Than
12/12	01	0052	003.91	003.91
12/10	01	0030	002.26	006.17
12/4	01	0101	007.59	013.76
11/10	01	0057	004,29	018.05
10/12	01	0024	001.80	019.85
10/9	02	0114	008.57	028.42
10/8	02	0087	006.54	034.96
10/7	01	0037	002.78	037.74
10/3	02	0116	008.72	046.46
9/10	02	0099	007.44	053.90
8/10	01	0040	003.01	056.91
8/9	01	0023	001.73	058.64
7/3	02	0071	005.34	063.98
4/9	01	0050	003.76	067.74
4/3	01	0086	006.47	074.21
3/10	03	0129	009.70	083.91
3/4	02	0118	008.87	092.78
3/2	01	0096	007.22	100.00
Totals 18 = n	26	1330	100.00	

The banks of step-pools were stable (Table 23).

Table 23. Step-Pool bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank Rank (Code)	Frequency (number)	Percent Occurrence (%)	Cumulative Length (feet)	Percent length (%)
1/1	15	057.69	0821	061.73
1/2	08	030.77	0351	026.39
1/4	02	007.70	0099	007.45
3/2	01	003.85	0059	004.44
4 = n	26	100.00	1330	100.00

Bedrock and boulder were the major bank components in step-pools (Table 24). There was one observation with boulder, bedrock and rootwad; half of its contribution was assigned to bedrock/boulder and the other half to bedrock/rootwad.

Table 24. Step-pool bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	6	023.80	0425	031.95
Bedrock/BR duff	1	003.85	0050	003.76
Boulders/Bedrock	5.5	021.15	0231	017.37
Bedrock/Root wad	2.5	009.62	0137	010.50
Bedrock/Bar	3	011.54	0137	010.50
Bedrock/Cobble	1	003.85	0034	002.56
Boulder/Boulder	1	003.85	0052	003.91
Boulder-RW/Bar	1	003.85	0059	004.44
Boulder/LWD	1	003.85	0024	001.80
Boulder/Bar	1	003.85	0057	004.29
Cobble/Redwood	1	003.85	0040	003.01
Vegetation/Boulders	1	00 3.85	0042	003.16
Slide/B-BR-RW	1	00 3.85	0042	003.16
Totals 13= n	26	100.00	1330	100.00

Embeddedness depth in step-pools was low to moderate (Table 25).

Table 25. Depth of embeddedness in Step-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)	Mean
1	20	076.92	1028	077.29 1028	
2	03	011.54	0134	010.08 0268	
3	03	011.54	0168	012.63 0204	
Totals 3 = n	26	100.00	1330	100.00	1.13

There were 15 different combinations of bank slope in step-pools (Table 26). Most of the banks were steep (73% were steeper than 45°).

Table 26. Step-pool bank slopes during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
90/90	04	0250	018.80
90/80	01	0045	003.38
90/60	01	0079	005.94
90/10	06	0073	005.49
90/5	01	0264	019.85
90/1	04	0154	011.59
70/10	01	0037	002.78
60/45	01	0045	003.38
25/15	01	0052	003.91
25/5	01	0042	003.16
15/10	01	0101	007.59
10/1	01	0042	003.16
5/2	01	0030	002.26
2/0	01	0057	004.29
1/1	01	0059	004.44
Totals 15 = n	26	1330	100.00

Most step-pool areas were adversely affected by sediment (Table 27).

Table 27. Proportion of step-pool area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%,

Rank (code)	Frequency (Number)	Percent Occurrence	Cumulative Length (feet)	Percent Length	Mean
1	04	15.38	252	18.95	
2	01	3.85	50	3.76	
3	06	23.07	246	18.50	
4	15	57.69	782	58.80	
Totals	26	100	1330	100	3.17

Over 60% of the percent surface fines covered at least 30% of step-pools (Table 28).

Table 28. Distribution of percent surface fines in step-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.03	09	034.62	0424	031.88	012.72	004.71
0.10	02	007.69	0099	007.44	009.90	003.66
0.15	04	015.38	0212	015.94	031.50	011.65
0.20	04	015.38	0191	014.36	038.20	014.13
0.25	01	003.85	0059	004.44	014.75	005.46
0.30	03	011.54	0141	010.60	042.30	015.65
0.40	01	003.85	0086	006.47	034.40	012.73
0.70	01	003.85	0039	002.93	027.30	010.10
0.75	01	003.85	0079	005.94	059.25	021.92
n = 9	26	100.00	1330	100.00	270.30	100.00

Mean percent weighted length = 20.32%

Area embeddedness was low downstream of Station 1618, but increased upstream of that location (Figure 8).

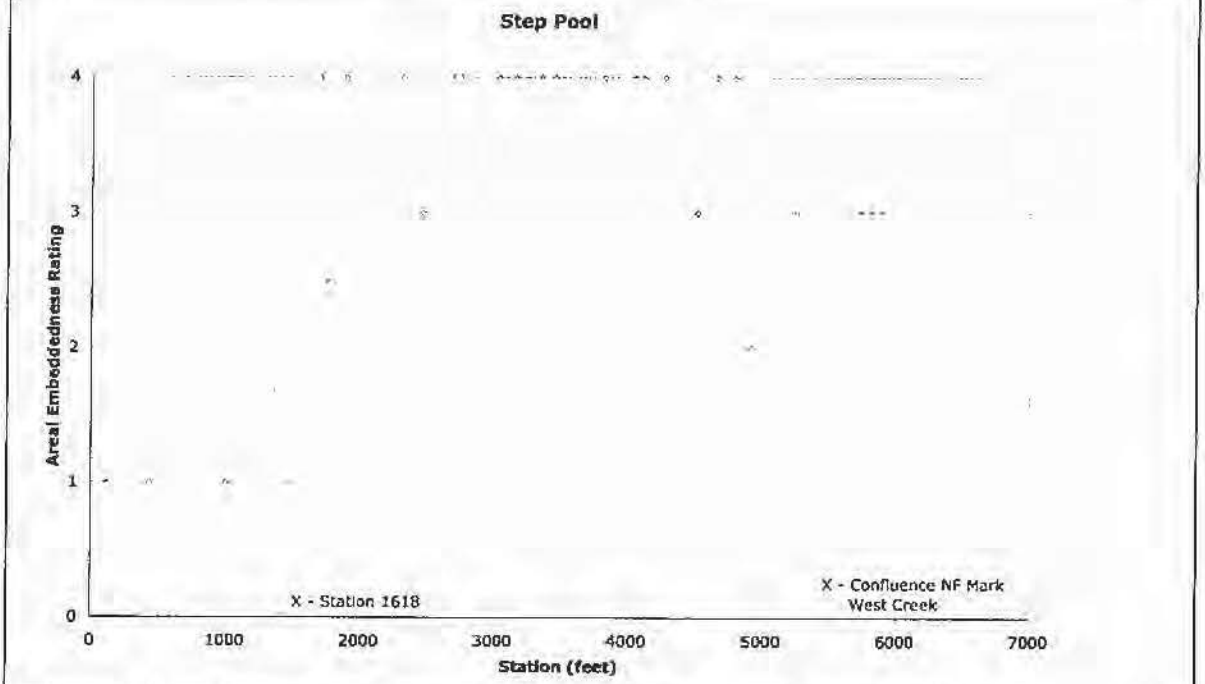

Figure 8. Longitudinal profile of area embeddedness in step-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent surface fines in step-pools was initially low, but increased noticeably upstream of Station 1618 (Figure 9).

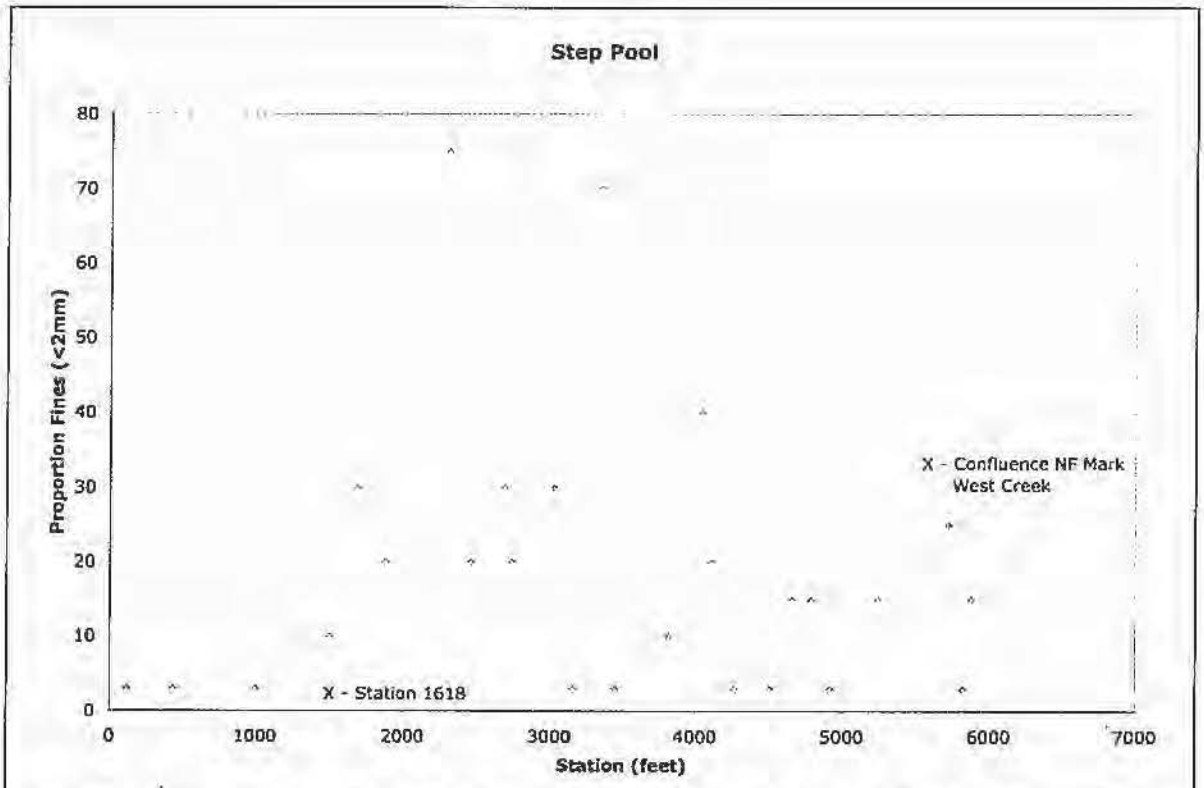

Figure 9. Longitudinal profile of step-pool percent surface fines during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

There was an increase in depth embeddedness upstream of station 1618 (Figure 10).

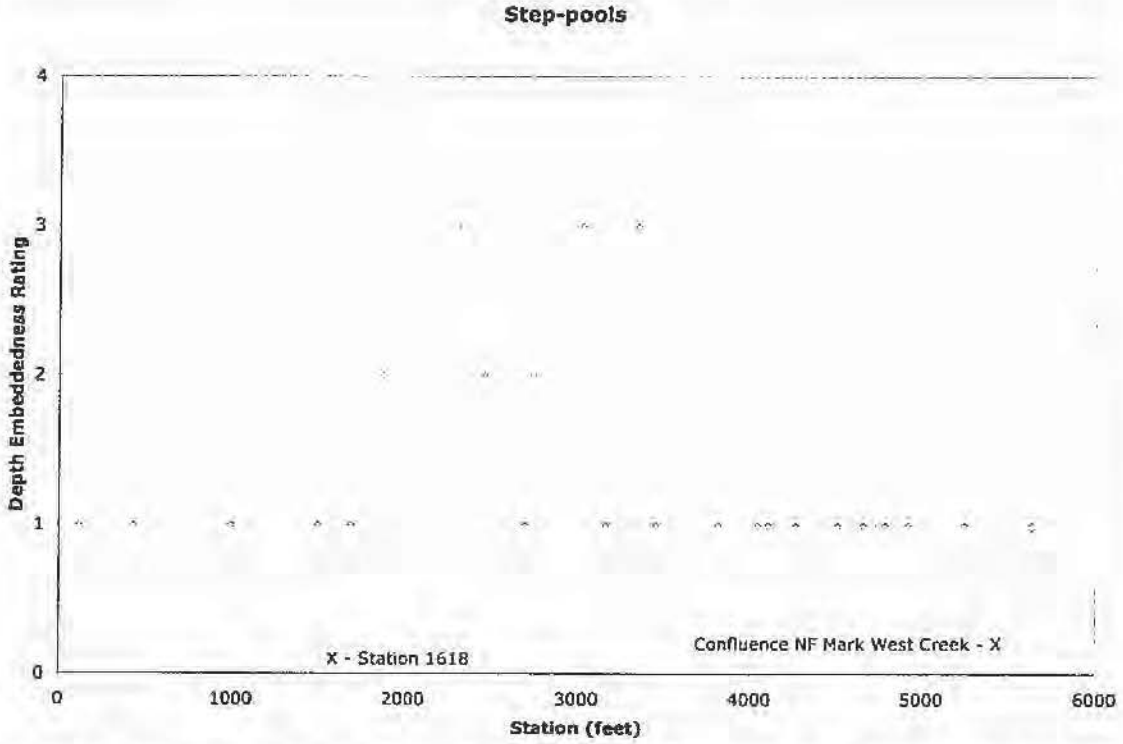

Figure 10. Longitudinal profile of depth embeddedness ratings in step-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Step-pool habitat quality was lower between Station 1000 and Station 5500 (Figure 11).

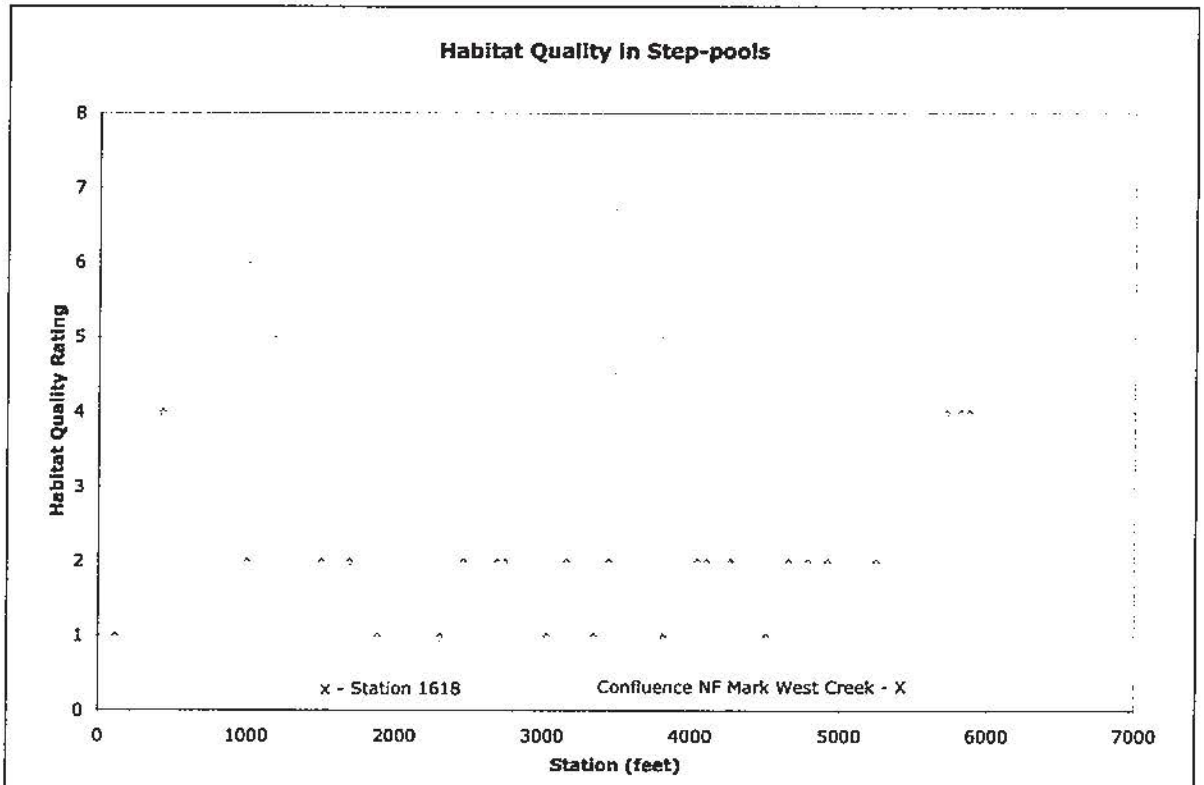

Figure 11. Longitudinal profile of habitat quality ratings in step-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

3. RUN SUMMARY

A run is a relatively deep habitat with flow. It is the intermediate between pool and riffle. A run does not scour during storms the way pools do and does not collect much sediment after the rains end. It does not have the gradient of a riffle and does not collect much bedload during the rain season. The greatest adverse effect of sediment on runs is the reduced roughness of the substrate. Another adverse effect is the filling of interstitial spaces used as habitat by aquatic invertebrates. In upper Mark West Creek, runs were shorter than the step-habitats and similar to riffle and cascade lengths (mean 32 feet), with a widths (mean 5.00 feet) and depths (mean 0.45 feet) similar to the step-habitats. There were only three runs in upper Mark West Creek; two of them occurred downstream of 10,000 cubic yard sediment release (Figure 12). Sediment related assessments are under-estimated in relation to this habitat type, compared with the other, more numerous habitat types in the sediment affected reach. Aquatic invertebrates can be supported in runs if the substrate is gravel to cobble sized, and there is current through the run.

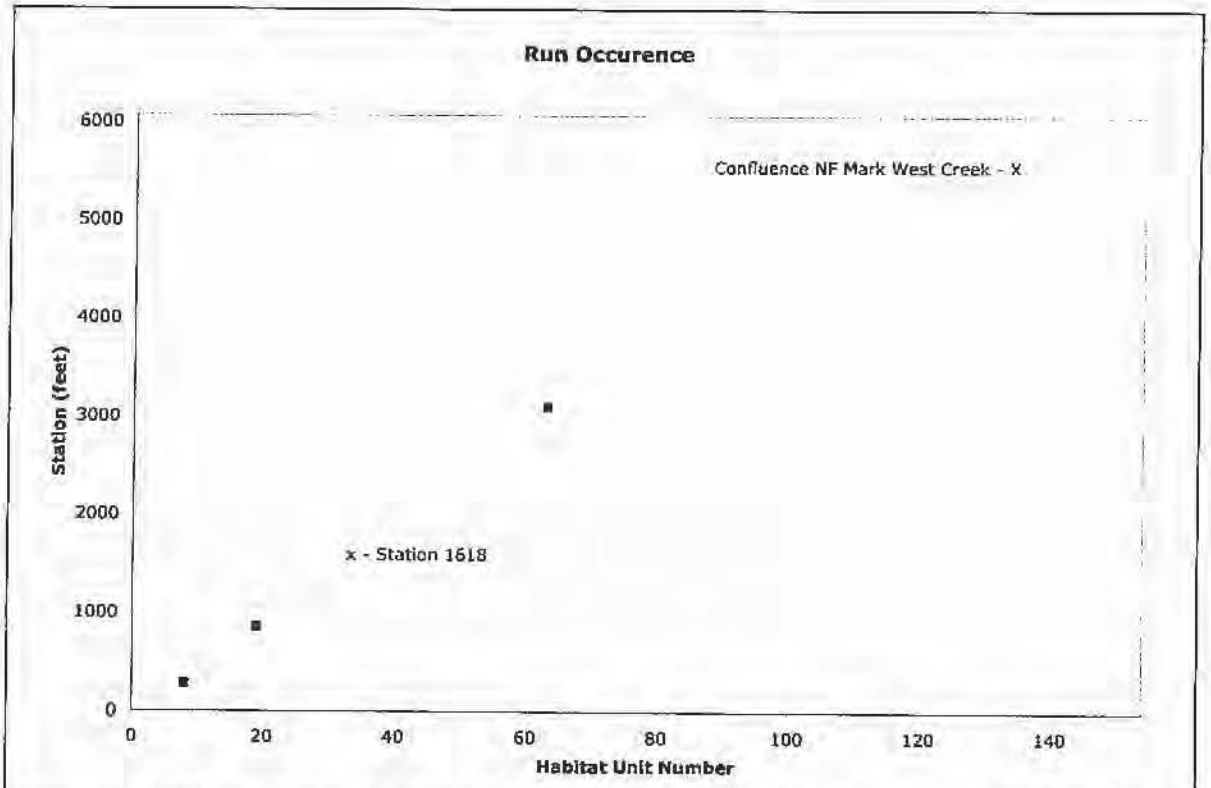

Figure 12. Occurrence of run habitats from Tar Water Bridge to upstream of NF Mark West Creek during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Run substrates were typically large without sediment influence, but were small (Wentworth 3/5) within the sediment release zone (Table 29).

Table 29. Run substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
12/5	1	24	025.00
10/9	1	52	054.17
3/5	1	20	020.83
Totals 3=n	3	96	100.00

Run banks were stable (Table 30).

Table 30. Run bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank Rank (Code)	Frequency (number)	Percent Occurrence (%)	Cumulative Length (feet)	Percent length (%)
1/1	3	100	96	100

Bedrock was a major component of run banks (Table 31).

Table 31. Run bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	1	33.33	20	020.83
Bedrock/Trees	1	33.33	24	025.00
Vegetation Boulders	1	33.33	52	054.17
Totals 3 = n	3	99.99	96	100.00

Depth of embeddedness in runs was light (Table 32).

Table 32. Depth of embeddedness in runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Components (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1	3	100.00	96	100.00

Run bank slopes were steep (Table 33).

Table 33. Run bank slopes under low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
90/45	1	20	20.83
45/25	1	52	54.17
15/5	1	24	25
Totals 3 = n	3	96	100

Two of the three runs were downstream of the 10,000 cubic yard sediment spill, so sedimentation relative to the other habitat types is under-represented (Table 34).

Table 34. Proportion of run area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

Rank (code)	Frequency (Number)	Cumulative Length (feet)	Mean
1	2	76	
4	1	20	
Totals	3	96	1.63

Table 35. Distribution of percent surface fines in runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.03	1	033.33	24	025.00	0.72	007.26
0.10	1	033.33	52	054.17	5.20	052.42
0.20	1	033.33	20	020.83	4.00	040.32
n = 3	3	100.00	96	100.00	9.92	100.00

Mean [percent surface fines of weighted length] = 10.33%

The two downstream runs are not under the influence of the 10,000 cubic yard sediment spill, consequently their area embeddedness is low (Figure 13).

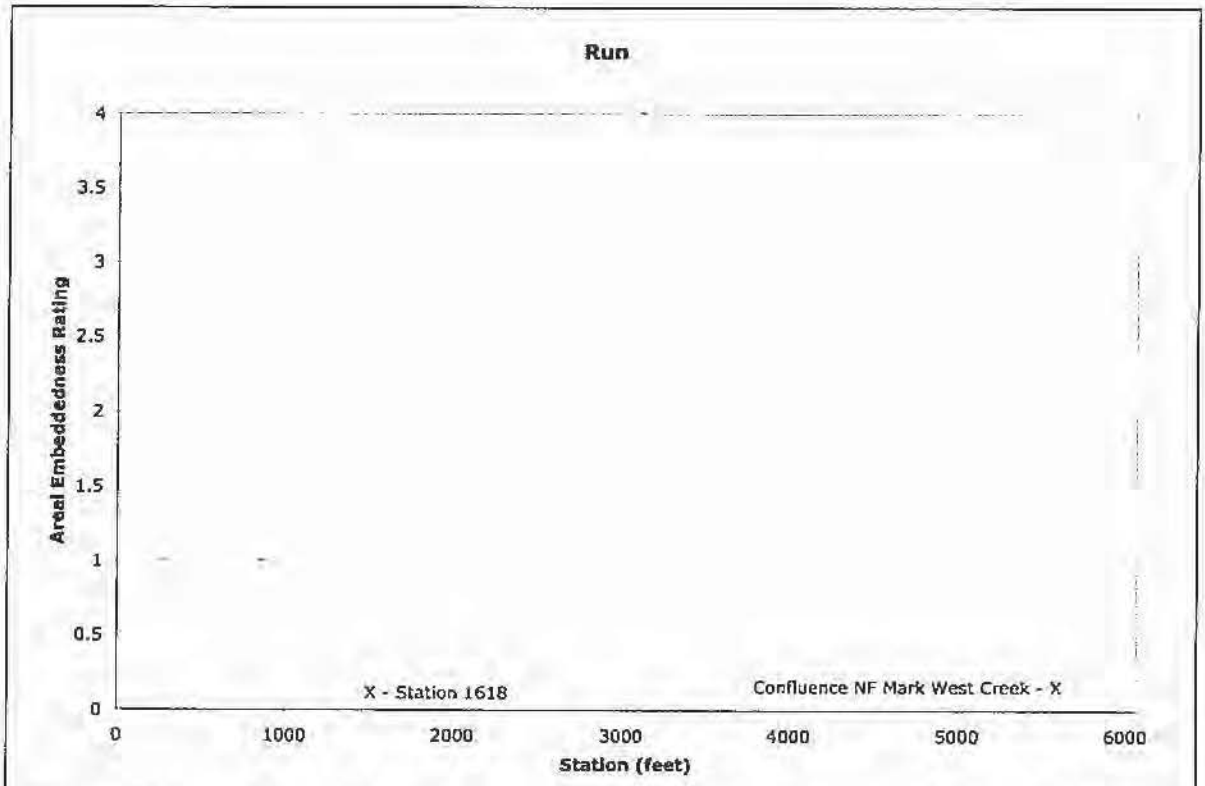

Figure 13 Longitudinal profile of area embeddedness in runs in upper Mark West Creek, Sonoma County, California, October 2008.

The two downstream runs are not under the influence of the 10,000 cubic yard sediment spill; as a result, their percent surface fines are low (Figure 14).

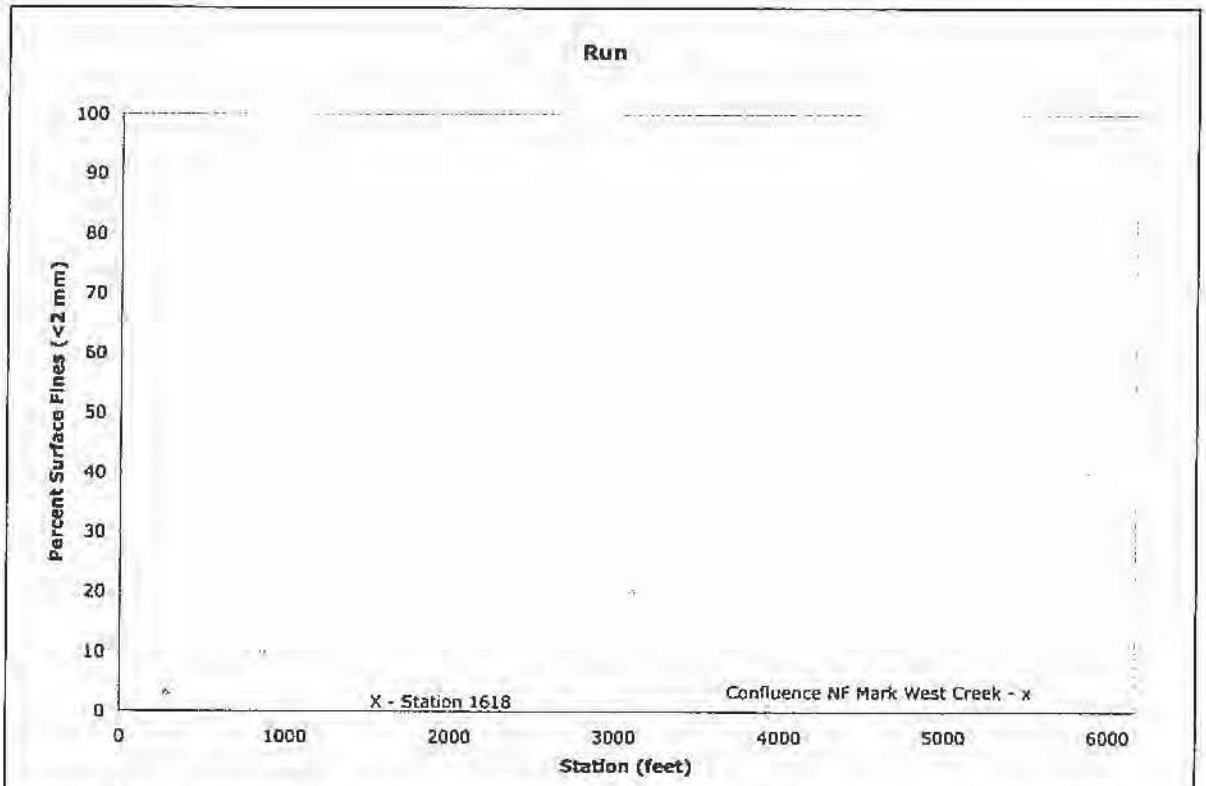

Figure 14. Longitudinal profile of percent surface fines in runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Depth embeddedness was low in runs (Figure 15).

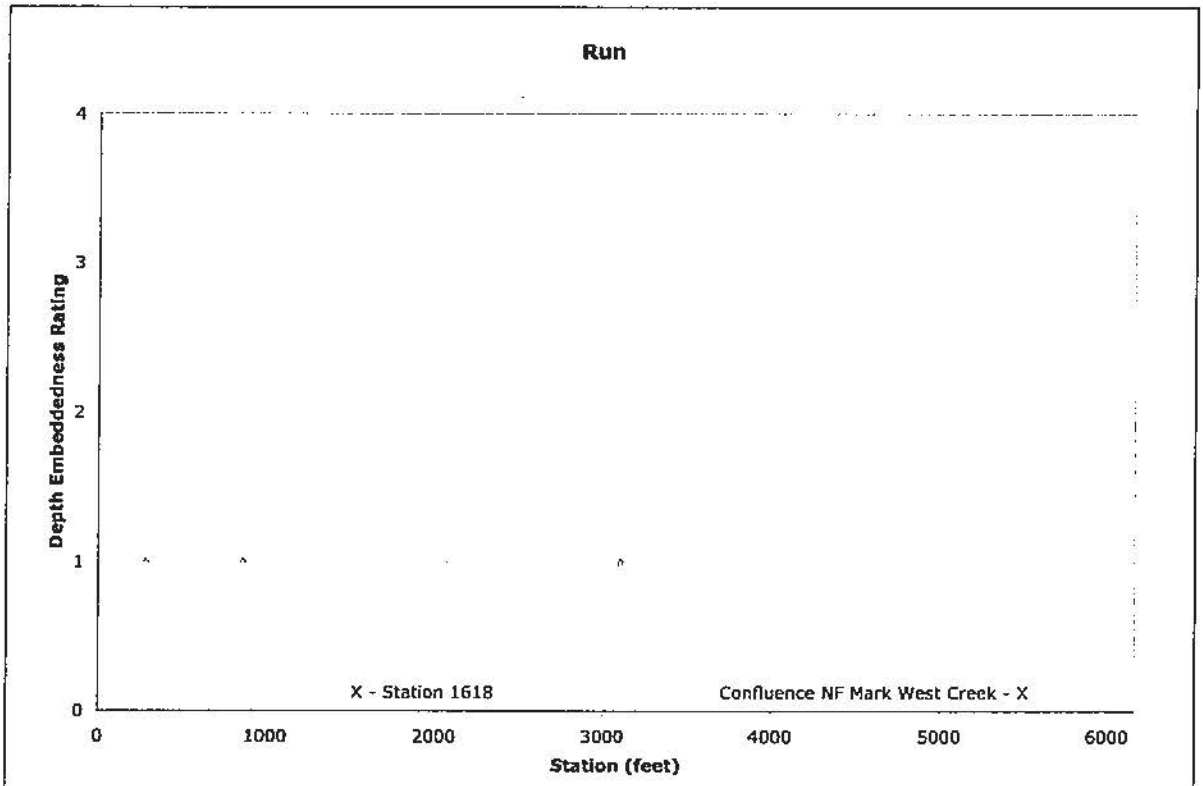

Figure 15. Longitudinal profile of depth embeddedness ratings in runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Runs had poor to fair habitat quality (Figure 16).

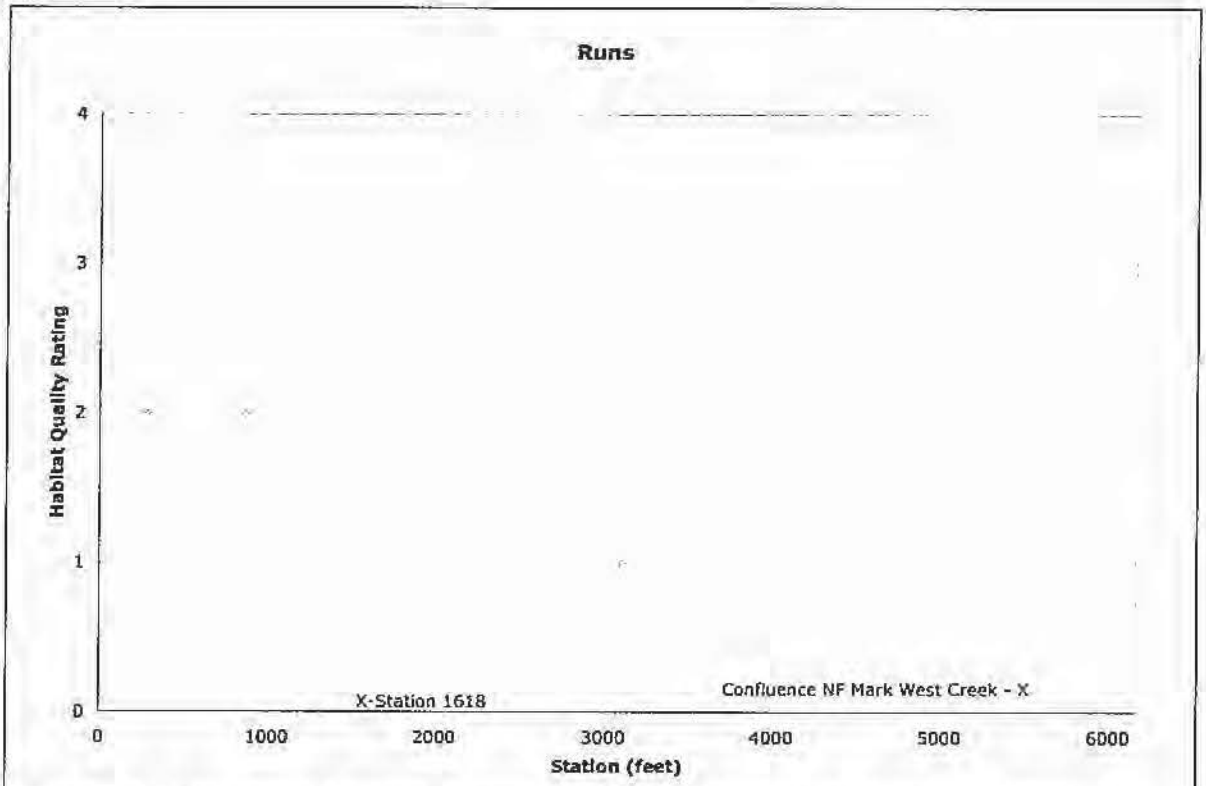

Figure 16. Longitudinal profile of habitat quality ratings in runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

4. STEP-RUN SUMMARY

A step-run is a flat-water habitat within a sloping gradient. It is a series of runs with a vertical gradient break between each run. A gradient break provides an immediate vertical loss in elevation. The run portion of the habitat must be longer than the gradient breaks. Sedimentation reduces roughness in the run portion. This affects station holding, juvenile steelhead abundance, and aquatic invertebrate production. In upper Mark West Creek, step-runs were longer (mean 54.74 feet *v.* mean 32.00 feet), wider (mean 5.45 feet *v.* mean 5.00 feet) and almost as deep as runs (mean 0.44 feet *v.* mean 0.45 feet). Step-runs were the shallowest of the step-habitats; they occurred mostly in the lower half of the surveyed reach (Figure 17). There were eight different substrate combinations, ranging from large gravel to bedrock. Some step-runs may produce aquatic invertebrates, if the substrate is sized between gravel and cobble, and there is current through the habitat.

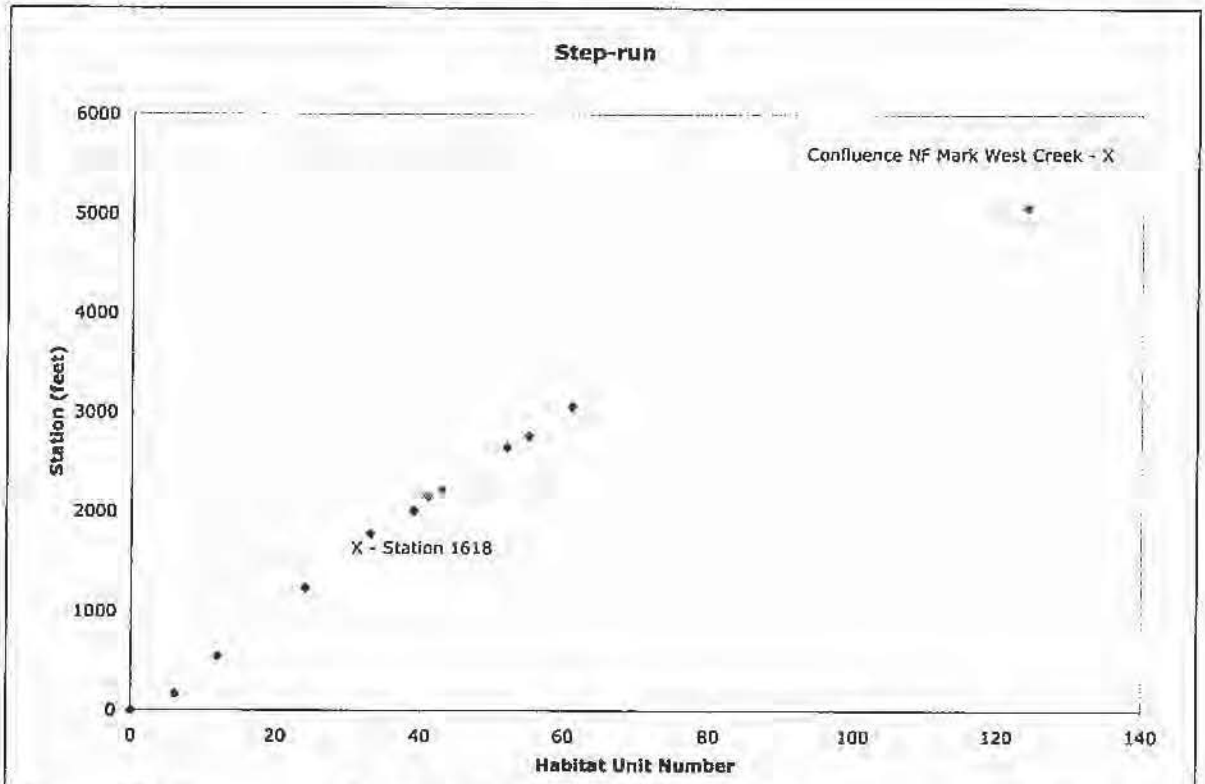

Figure 17. Occurrence of step-run from Tar Water Bridge to just upstream of NF Mark West Creek in upper Mark West Creek, Sonoma County, California, October 2008.

Step-runs were composed of larger substrate (Table 36).

Table 36. Step-Run substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)	Percent Larger Than
12/10	02	185	030.73	030.73
12/7	01	029	004.82	035.55
10/9	01	034	005.65	041.20
10/7	02	065	010.80	052.00
10/3	01	093	015.45	067.45
9/3	01	027	004.49	071.94
7/9	02	139	023.09	095.03
6/10	01	030	004.98	100.00
Totals 8 = n	11	602	100.00	

Step-run banks were stable (Table 37).

Table 37. Step-run bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank Rank (Code)	Frequency (number)	Percent Occurrence (%)	Cumulative Length (feet)	Percent Length (%)
1/1	10	090.91	573	095.18
1/2	01	009.09	029	004.82
Totals 2 = n	11	100.00	602	100.00

Bedrock was the dominant bank component of step-runs (Table 38).

Table 38. Step-run bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	05	045.45	275	045.68
Bedrock/Bedrock-rootwad	01	009.09	030	004.98
Boulder/Bedrock-rootwad	01	009.09	125	020.76
Bedrock/cobble	01	009.09	029	004.82
Boulder-Vegetation/Bedrock	01	009.09	078	012.96
Boulder-trees/boulder-trees	02	018.18	065	010.80
Totals 6 = n	11	100.00	602	100.00

Embeddedness depth in step-runs was light to moderate (Table 39).

Table 39. Depth of embeddedness in step-runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)	Weighted Length	Mean
1	08	072.73	417	069.27	417	
2	03	027.27	185	030.73	370	
Totals 2 = n	11	100.00	602	100.00	787	1.31

Bank slopes were generally steep (Table 40).

Table 40. Step-run bank slopes during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

	Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
	90/90	1	60	9.97
	90//85	1	93	15.45
	90/80	1	27	4.49
	90/60	1	61	10.13
	90/15	1	78	12.96
	75/5	1	30	4.98
	60/30	1	125	20.76
	45/45	1	34	5.65
	45/5	1	29	4.82
	5/5	2	65	10.8
Totals	10=n	11	602	100

Step-run areas were generally covered by sediment (Table 41).

Table 41. Proportion of step-run area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

Rank (code)	Frequency (Number)	Cumulative Length (feet)	Percent Length (%)	Mean
1	02	068	011.30	
2	01	125	020.76	
3	01	029	004.82	
4	07	380	063.12	
Totals	11	602	100.00	3.20

Over 55% of step-runs had percent surface fines greater than 15% (Table 42).

Table 42. Distribution of percent surface fines in step-runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.03	02	018.18	063	010.47	01.89	002.55
0.05	01	009.09	034	005.65	01.70	002.29
0.10	05	045.45	291	048.34	29.10	039.28
0.15	02	018.18	121	020.10	18.15	024.50
0.25	01	009.09	093	015.45	23.25	031.38
5 = n	11	100.00	602	100.00	74.09	100.00

Mean Percent Surface Fines in weighted length = 12.31%

Step-runs areas were typically filled with sediment upstream of Station 1618 and only lightly sedimented downstream (Figure 18).

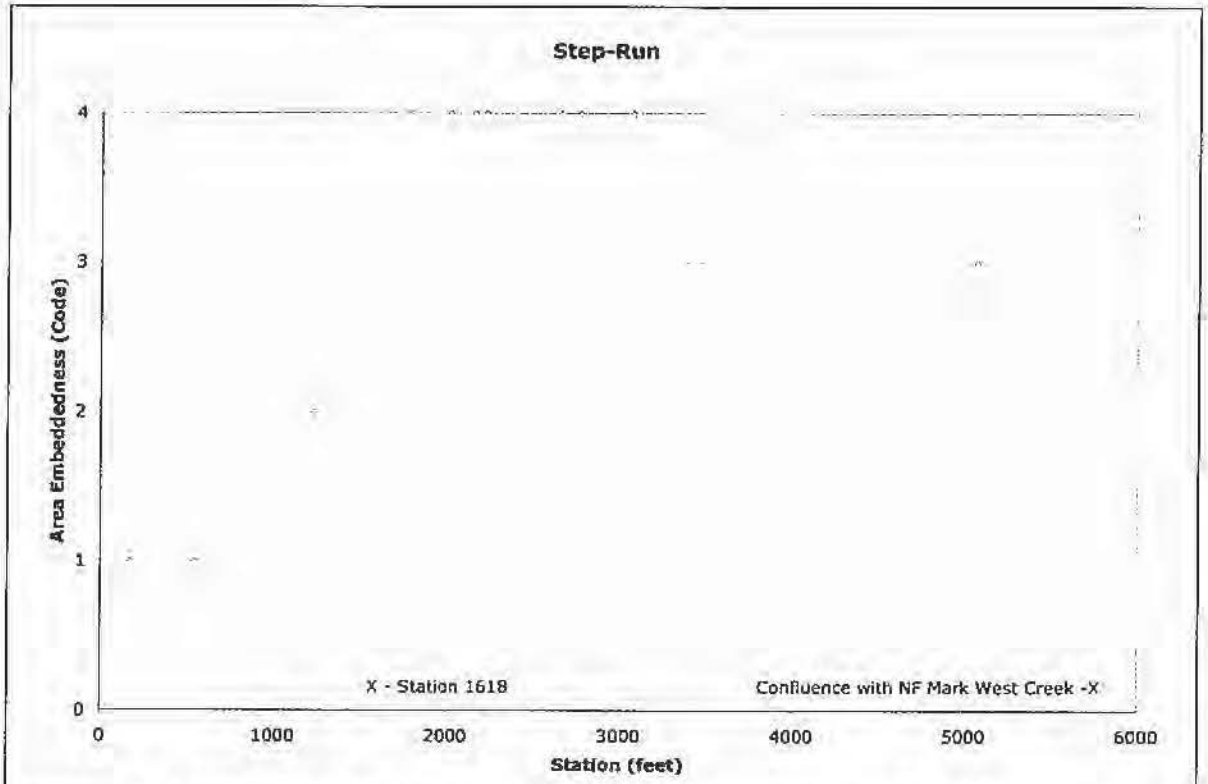

Figure 18. Longitudinal profile of area embeddedness in step-runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent surface fines (<2mm) was typically higher upstream of Station 1618 (Figure 19).

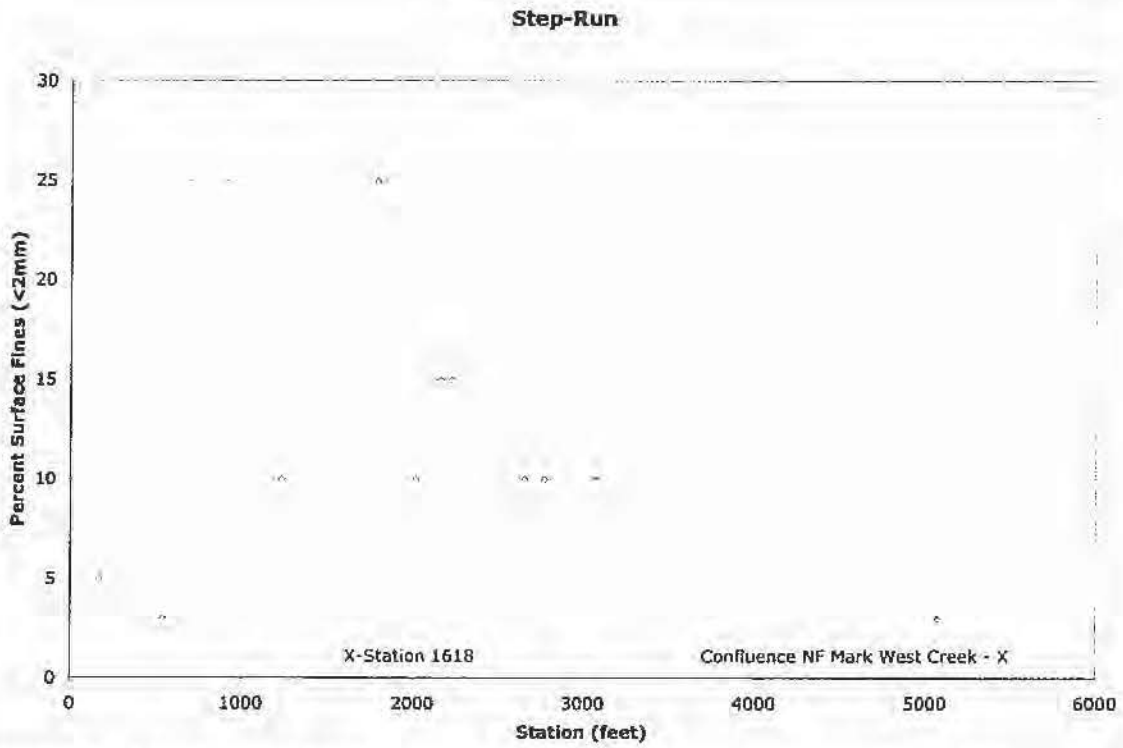

Figure 19. Longitudinal profile of percent surface fines in step-runs during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

There was an increase in depth embeddedness upstream of Station 1618 (Figure 20).

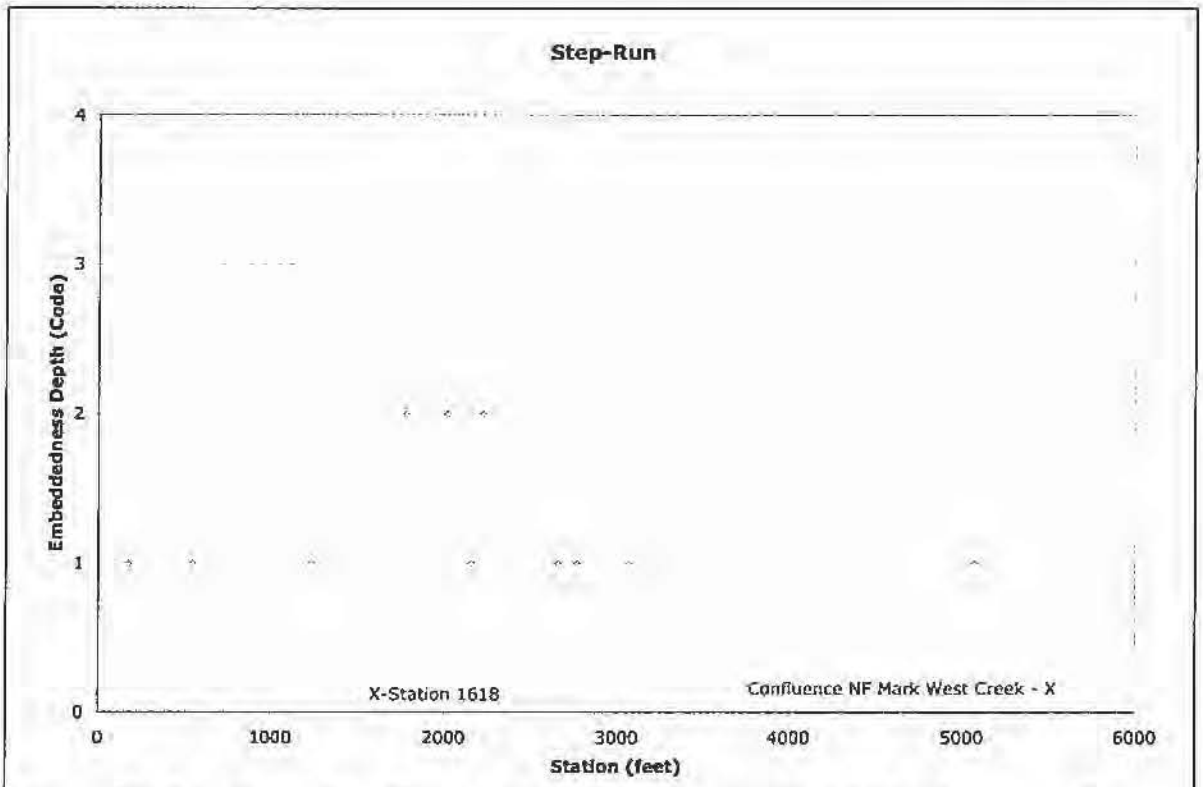

Figure 20. Longitudinal profile of depth embeddedness ratings during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Step-run habitat quality was fair (Figure 21).

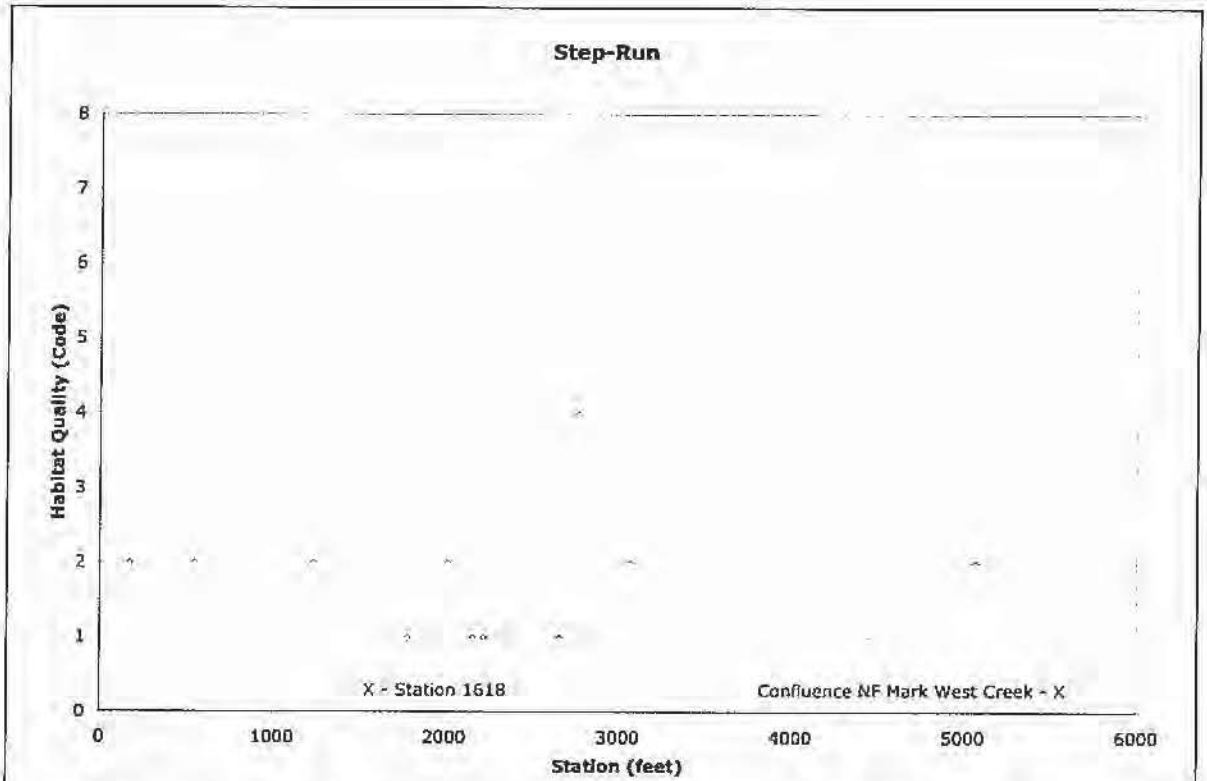

Figure 21. Longitudinal profile of habitat quality ratings during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

5. POCKET-POOL SUMMARY

In order for pocket-pools to form, there must be stream current and large obstructions. These conditions result in pockets of quiet water behind the obstructions, hence, the synonym pocketwater for pocket-pool. The quiet water does not occupy the entire width of the stream channel; there must also be flow between the obstructions. Pocket-pools in upper Mark West Creek are less than 50 feet long (Mean 43.33 feet), which makes them shorter than any of the step-habitats. They are less than 4 feet wide. This makes them narrower than any of the step-habitats, but wider than the riffles or cascades. Although they are shallower than any other pool (about half a foot), they are deeper than riffles or cascades. However, we only surveyed three pocket pools, so these generalities may also be the result of low representation (Figure 22). All pocket-pools occurred within the 10,000 cubic yard sediment plume. Pocket-pools generally provide habitat for both aquatic invertebrates and steelhead.

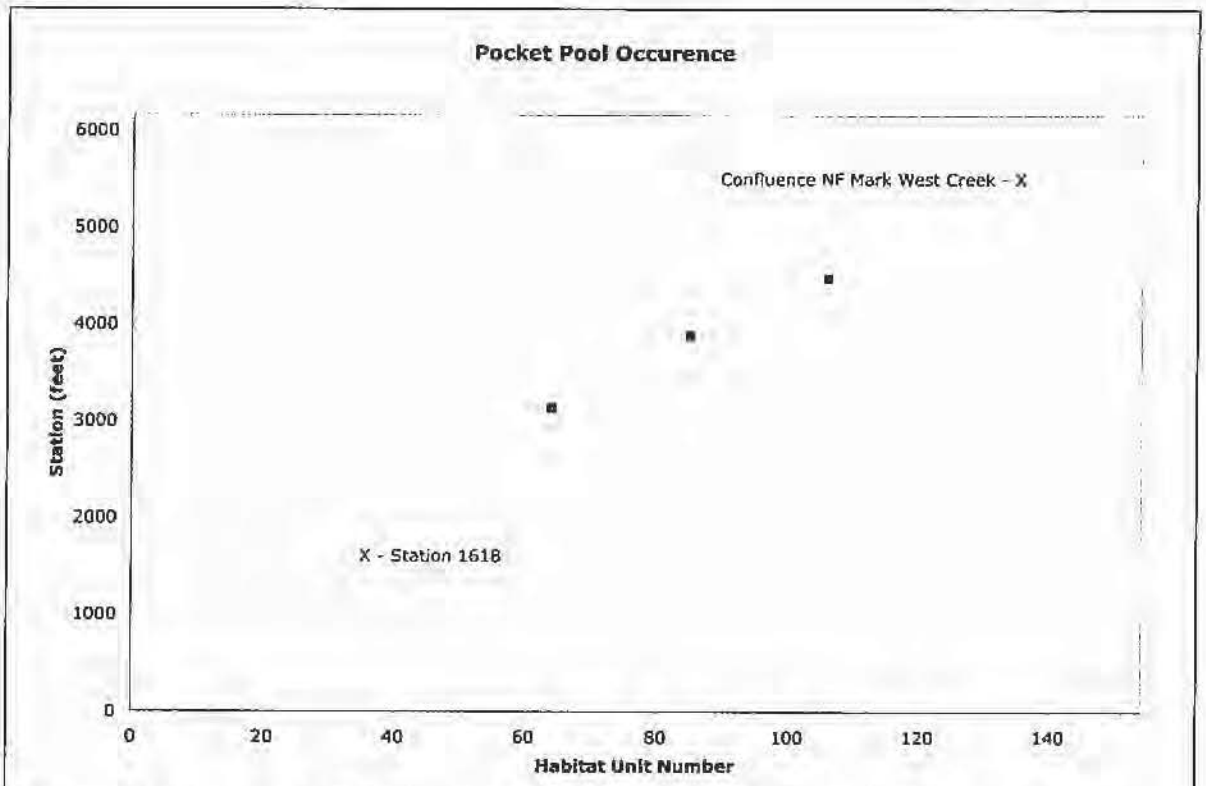

Figure 22. Occurrence of pocket-pools from Tar Water Bridge to just upstream of NF Mark West Creek during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Pocket-pool substrate tends toward the larger sizes (Table 43).

Table 43. Pocket-pool substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (number)	Cumulative Length (feet)	Percent (%)
12/10	1	032	024.62
10/9	1	062	047.69
5/3	1	036	027.69
Totals 3 = n	3	130	100.00

Pocket-pool banks were stable (Table 44).

Table 44. Pocket-pool bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank Rank (Code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1/1	2	066.67	094	072.31
2/1	1	033.33	036	027.69
Totals 2 =n	3	100.00	130	100

Bedrock was a major component of pocket-pool banks (Table 45).

Table 45. Pocket-pool bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components (description)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	1	33.33	032	024.62
Bedrock/boulder	1	33.33	062	047.69
Bedrock/Bar	1	33.33	036	027.69
Totals 3 = n	3	99.99	130	100.00

Embeddedness depth in pocket-pools was light (Table 46).

Table 46. Depth of embeddedness in pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1	3	100.00	130	100.00

Pocket-pool bank slopes were typically steep (Table 47).

Table 47. Pocket-pool bank slopes during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

	Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
	90/40	1	062	047.69
	90/1	2	068	052.31
Totals	2=n	3	130	100

All pocket-pools occurred within the 10,000 cubic yard sediment plume, upstream of Station 1618, so all the areas were heavily embedded (Table 48).

Table 48. Proportion of pocket-pool area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

Rank (code)	Frequency (Number)	Cumulative Length (feet)	Mean
1	0	0	
2	0	0	
3	1	62	
4	2	68	
Totals	3	130	3.52

Percent surface fines in pocket-pools was 3% (Table 49).

Table 49. Distribution of percent surface fines in pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.03	3	100.00	130	100.00	3.9	100.00
n = 1	3	100.00	130	100.00	3.9	100.00

Mean percent surface fines weighted length = 3%

All pocket pools were within the 10,000-yard sediment plume; consequently, their area embeddedness was high (Figure 23).

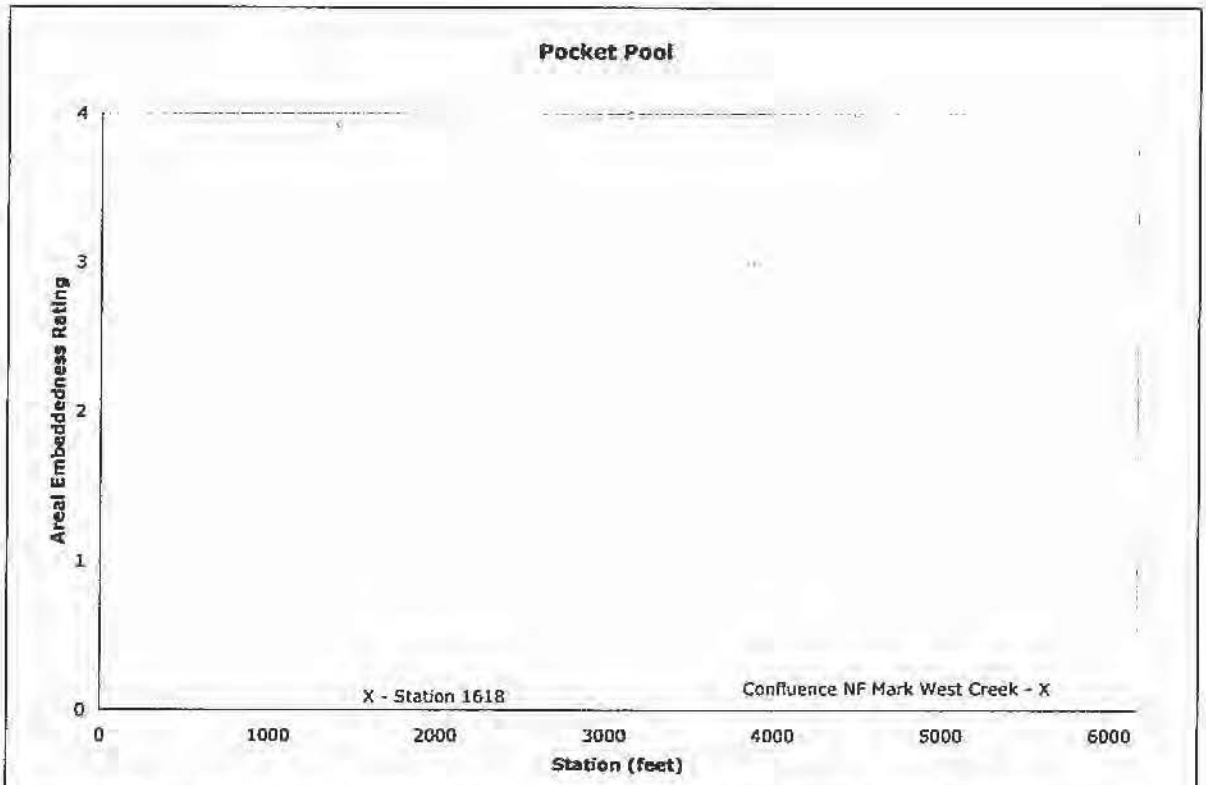

Figure 23. Longitudinal profile of area embeddedness in pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent surface fines in pocket-pools were small (Figure 24).

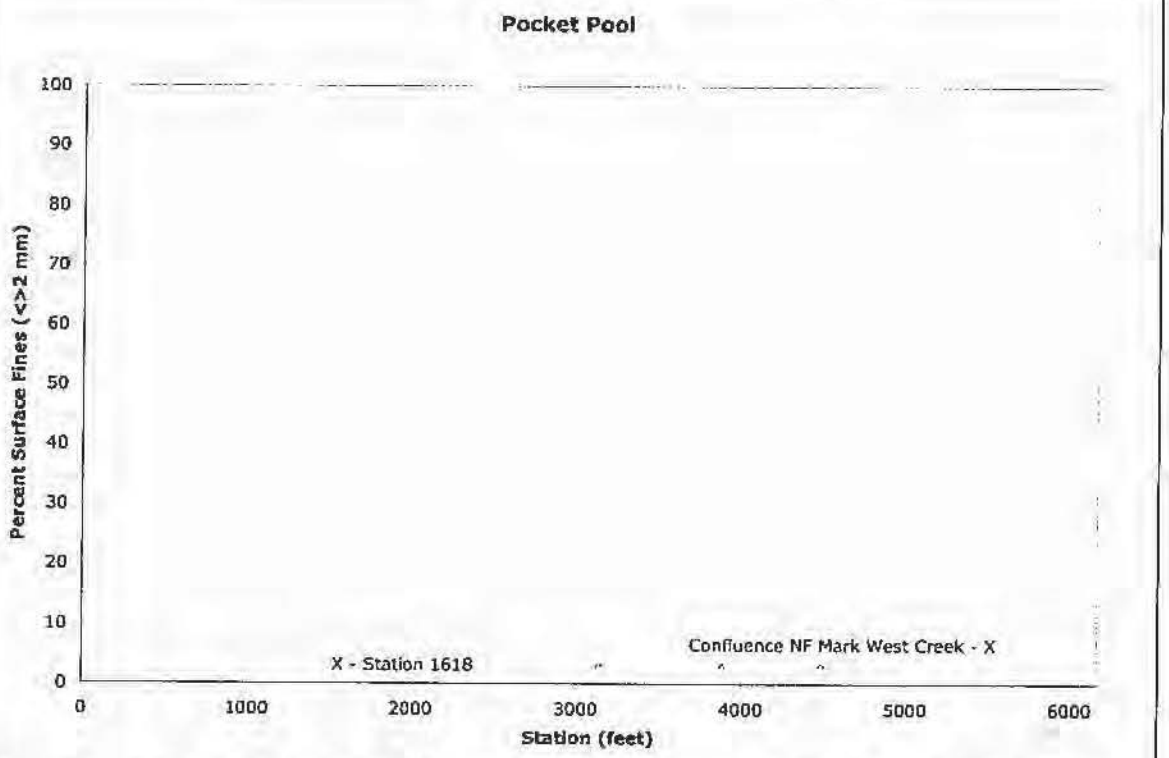

Figure 24. Longitudinal profile of percent surface fines in pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California October, 2008.

Pocket-pool depth embeddedness was light (Figure 25).

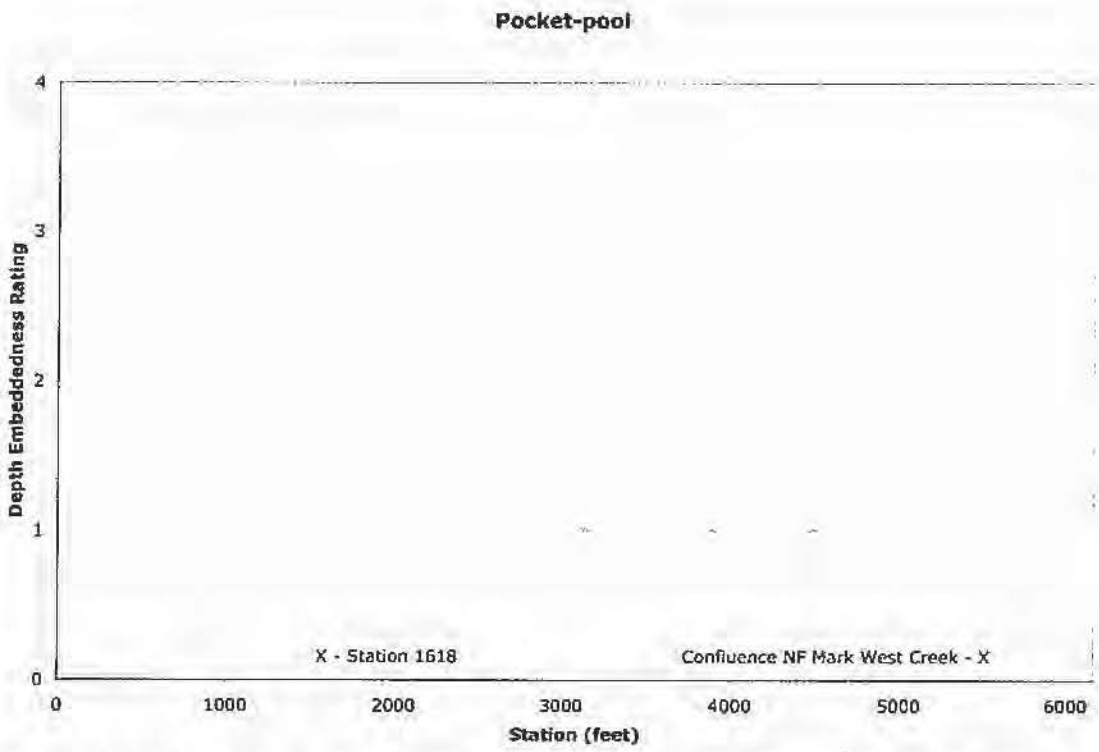

Figure 25. Longitudinal profile of depth embeddedness in pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Habitat quality in pocket-pools was poor to fair (Figure 26).

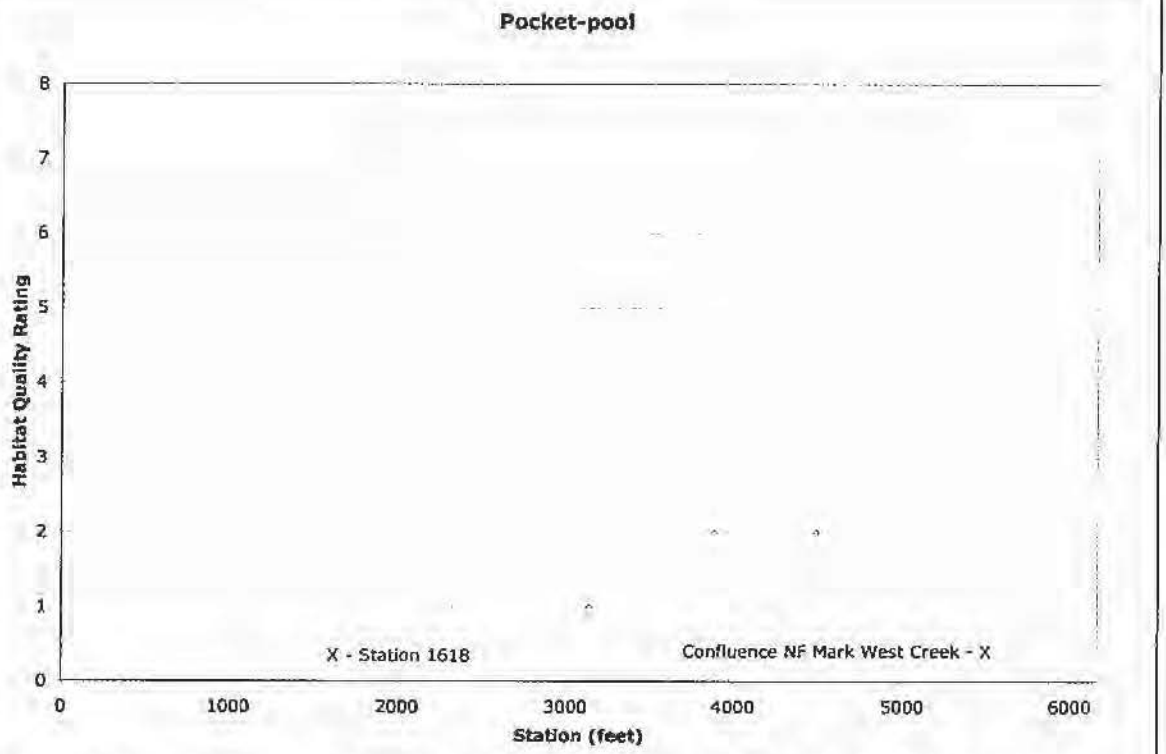

Figure 26. Longitudinal profile of habitat quality ratings in pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

6. STEP-POCKET-POOL SUMMARY

Step-pocket-pools are a series of pocket-pools with vertical gradient breaks in between them. Pocket-pools must be longer than the steps, and they should not occupy the entire channel width. Step-pocket-pools are among the longer habitat units (mean 49.11 feet). They are generally narrower (mean 4.89 feet) and deeper (mean 0.58 feet) than the other step-habitats. Step-pocket-pools occurred throughout the area assessed; however, there were spatial gaps early and late in the assessment. We surmise that those areas were lacking the sediment plugs that facilitate the development of step-pocket-pools (Figure 27). Step-pocket-pools can support both aquatic invertebrates and steelhead.

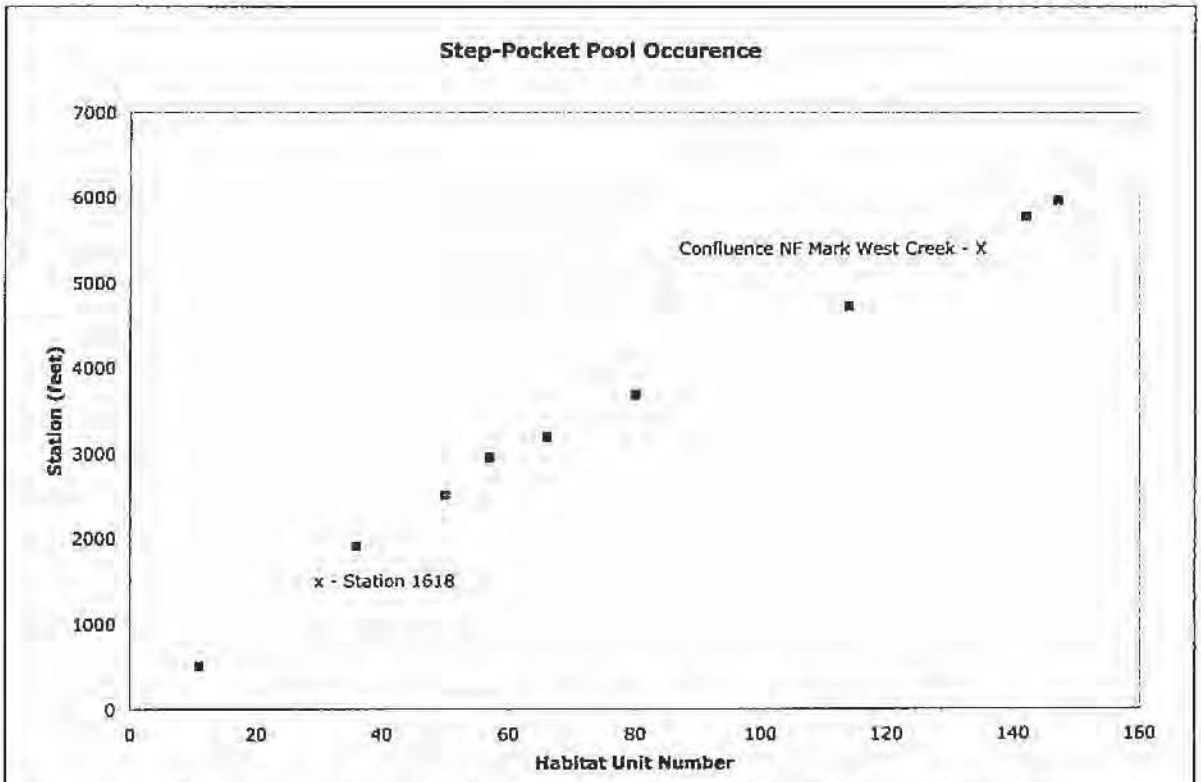

Figure 27. Occurrence of step-pocket-pools from Tar Water Bridge to just upstream of NF Mark West Creek during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Step-pocket-pool substrate tends to be large, but potentially mobile (Table 50).

Table 50, Step-pocket-pool substrate composition under low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
10/9	3	142	032.13
10/8	1	056	012.67
10/7	3	148	033.48
10/3	1	058	013.12
8/10	1	038	008.60
Totals 5 = n	9	442	100.00

Step-pocket-pool banks were stable (Table 51).

Table 51. Step-pocket-pool bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank Rank (Code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1/1	5	055.56	283	064.03
1/2	3	033.33	127	028.73
2/2	1	011.11	032	007.24
Totals 3=n	9	100	442	100

Boulder is the major bank component associated with step-pocket-pools (Table 52).

Table 52. Step-Pocket Pool bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008

Bank Components (description)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	1	011.11	035	007.92
Bedrock/Boulder	3	033.33	189	042.76
Boulder/Boulder	2	022.22	114	025.79
Boulder/Bar	1	011.11	032	007.24
Vegetation/Hardpan-tree	1	011.11	038	008.60
Rootwad/Vegetation	1	011.11	034	007.69
Totals 6 = n	9	100.00	442	100.00

Depth of embeddedness in step-pocket-pools was light to moderate (Table 53).

Table 53. Depth of embeddedness in step-pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

	Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)	Weighted Length	Mean
	1	6	066.67	253	057.24	253	
	2	3	033.33	189	042.76	378	
Totals	2 = n	9	100.00	442	100.00	631	1.43

Step-pocket-pool bank slopes were steep (Table 54).

Table 54. Step-pocket-pool bank slopes, during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

	Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
	90/80	1	035	007.92
	90/45	1	075	016.97
	90/5	2	114	025.79
	60/10	1	035	007.92
	45/2	1	032	007.24
	15/5	1	079	017.87
	10/2	1	038	008.60
	1/1	1	034	007.69
Totals	8=n	9	442	100.00

Step-pocket-pool area was heavily embedded with sediment (Table 55).

Table 55. Proportion of step-pocket-pool area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

	Rank (code)	Frequency (Number)	Cumulative Length (feet)	Percent Length (%)	Mean
	1	1	079	017.87	
	2	1	034	007.69	
	3	4	224	050.68	
	4	3	105	023.76	
Totals		9	442	100.00	2.80

Almost 32% of step-pocket-pool surface had 20% or more percent surface fines (Table 56).

Table 56. Distribution of percent surface fines in step-pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.03	6	066.67	274	061.99	08.22	022.63
0.15	2	022.22	110	024.89	16.5	045.43
0.20	1	011.11	058	013.12	11.6	031.94
n = 3	9	100.00	442	100.00	36.32	100.00

Mean percent surface fines weighted length = 8.22%

Step-pocket-pools show the effects of the 10,000 cubic yard sediment plume; there is elevated area embeddedness upstream of station 1618 (Figure 28).

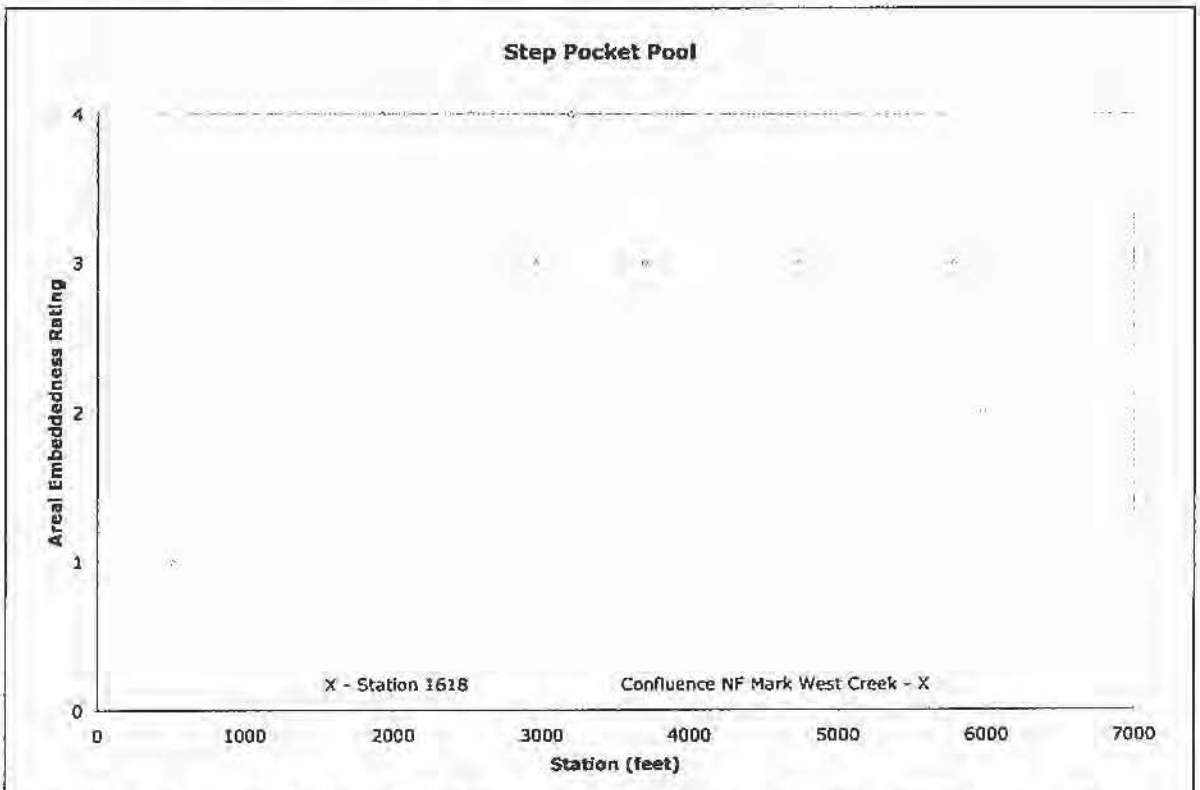

Figure 28. Longitudinal profile of area embeddedness of step-pocket-pools in upper Mark West Creek, Sonoma County, California, October, 2008.

Percent surface fines were relatively light in step-pocket-pools (Figure 29).

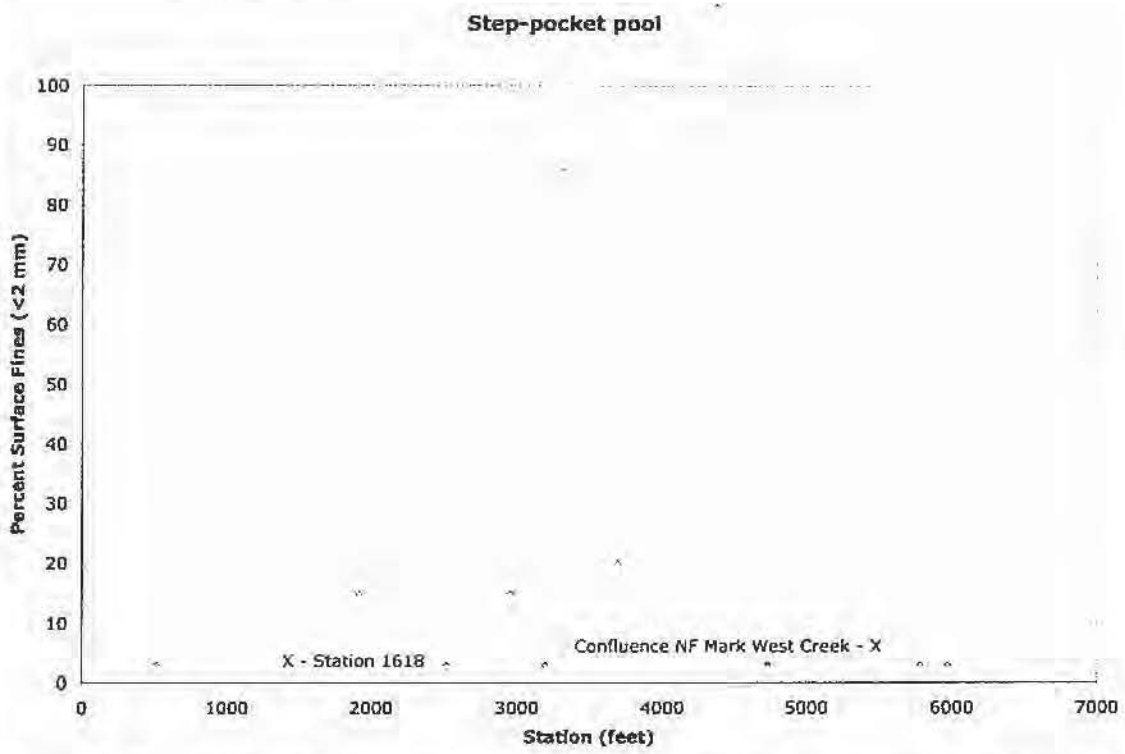

Figure 29. Longitudinal profile of percent surface fines in step-pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Step-pocket-pool depth embeddedness ratings were light to moderate (Figure 30).

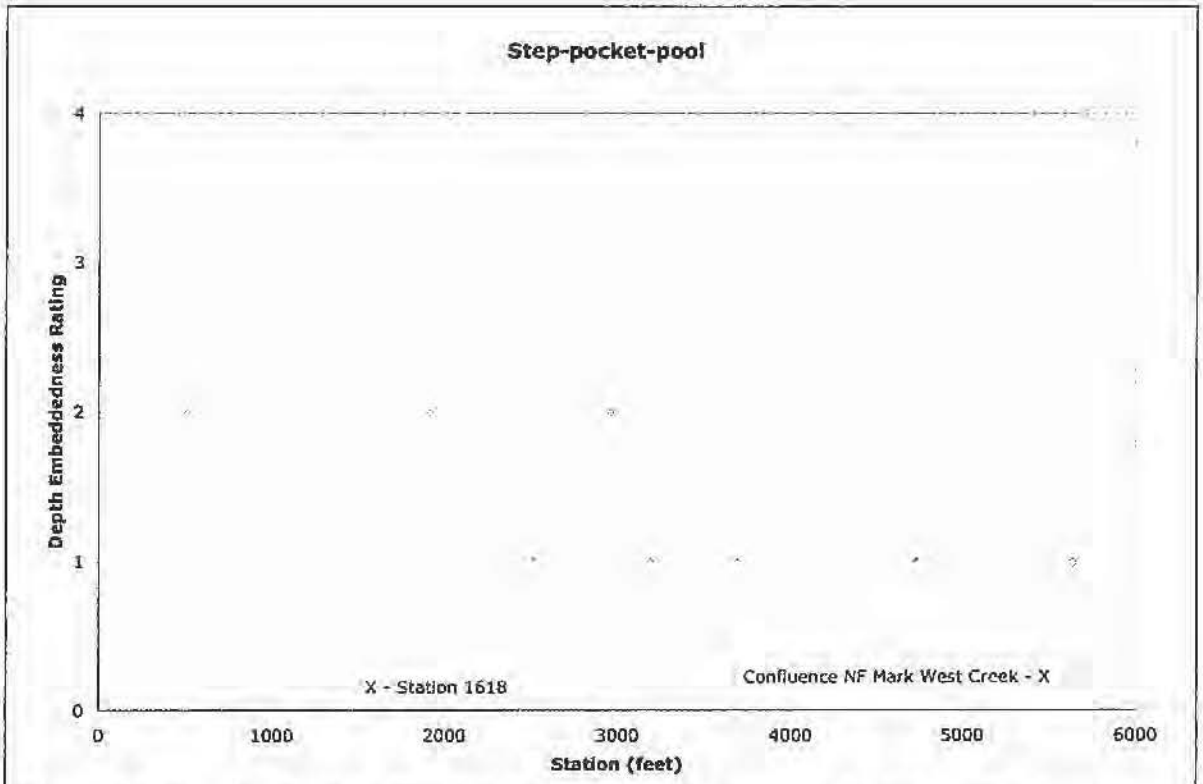

Figure 30. Longitudinal profile of depth embeddedness ratings in step-pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Step-pocket-pool habitat quality ratings were generally fair, but increased around station 5500 (Figure 31).

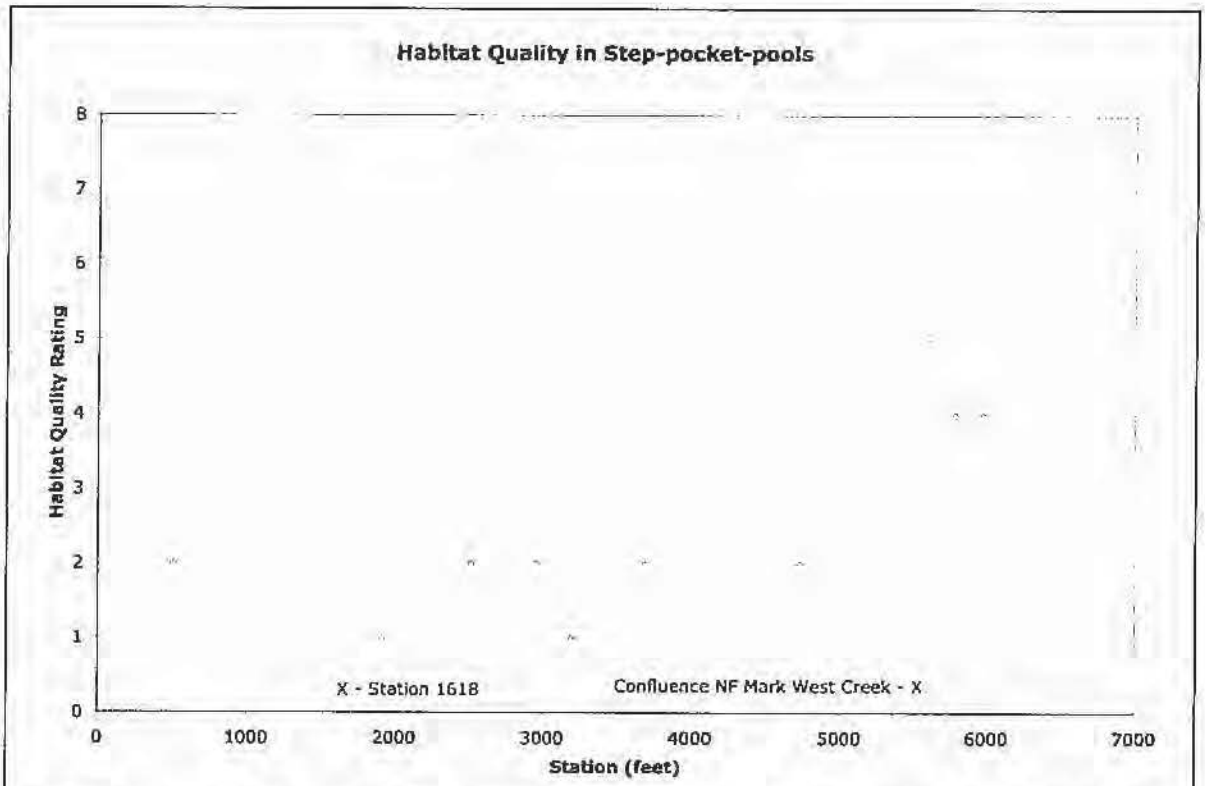

Figure 31. Longitudinal profile of habitat quality ratings in step-pocket-pools during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

7. LOW GRADIENT RIFFLE SUMMARY

Riffles are habitats with a sloping gradient. Low gradient riffles have a gradient of 4% or less. During the time of this assessment, low gradient riffles were short (mean 30.79 feet), narrow (mean 3.41 feet), and shallow (mean 0.27 feet). Riffles are habitats where fish food is produced (Needham 1938). They are the habitats where aquatic invertebrate abundance is highest. This means that they can also be habitats for steelhead, if there is sufficient depth. Low gradient riffles occurred throughout the surveyed reach, but there is an absence of low gradient riffles between Stations 1800 to 3100 (Figure 32).

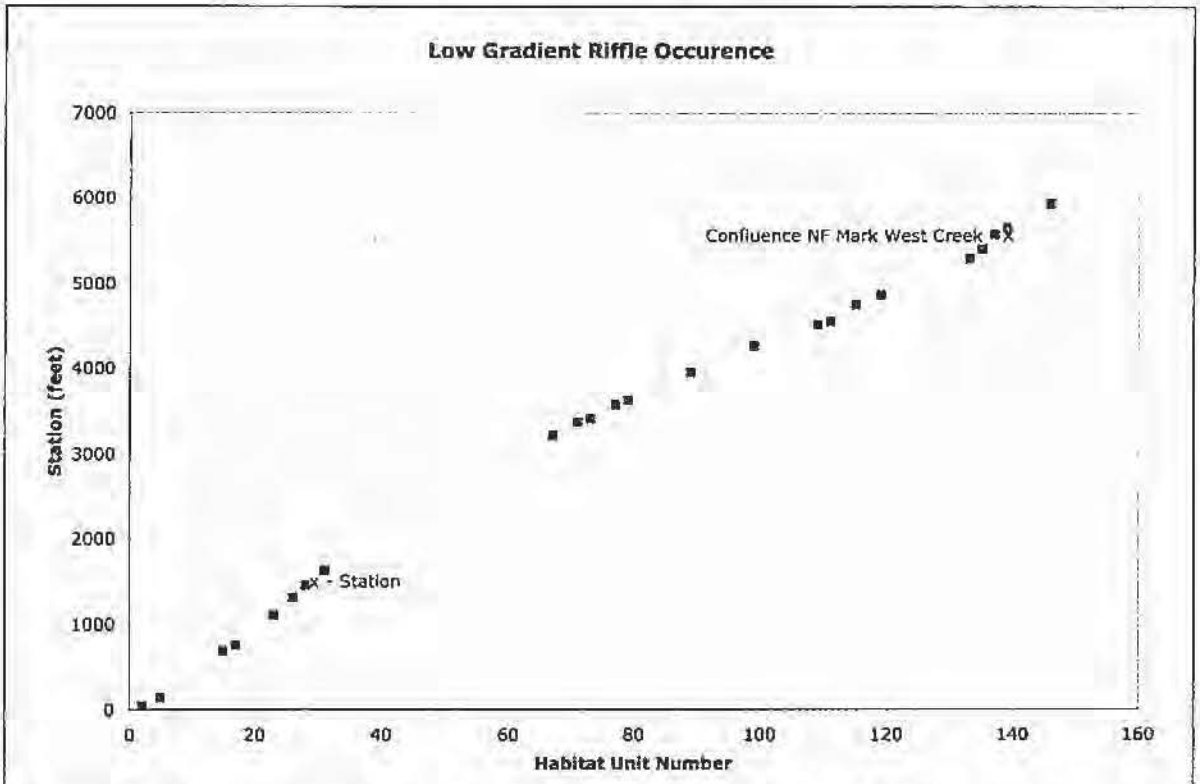

Figure 32. Occurrence of low gradient riffles from Tar Water Bridge to just upstream of NF Mark west Creek during low streamflow conditions in upper Mark West Creek, Sonoma County, California October, 2008

Low gradient riffles had a wide range in substrate size composition (Table 57).

Table 57. Low Gradient Riffle substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (Number)	Cumulative Length (feet)	Percent Length (%)
12/10	01	026	003.58
11/10	01	030	004.13
10/9	02	024	003.30
10/8	04	119	016.37
10/7	02	095	013.07
9/10	01	037	005.09
9/7	02	070	009.63
9/5	01	006	000.83
7/10	01	016	002.20
7/9	03	144	019.81
7/6	02	090	012.38
6/5	01	017	002.34
6/3	01	014	001.93
4/12	01	028	003.85
4/8	01	011	001.51
Totals 15=n	24	727	100.00

Low gradient riffle banks were stable (Table 58).

Table 58. Low gradient riffle bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Rank (Code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1/1	13	054.17	470	064.65
1/2	09	037.50	219	030.12
1/4	01	004.17	015	002.06
2/2	01	004.17	023	003.16
Totals 4 = n	24	100.00	727	100.00

Bedrock and Boulder were major bank components adjacent to low gradient riffles (Table 59).

Table 59. Low gradient riffle bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components (description)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	01	004.17	015	002.06
Bedrock/Trees	02	008.33	089	012.24
Bedrock/Boulder	06	025.00	209	022.56
Bedrock/Bar	04	016.67	067	009.22
Boulder/Boulder	04	016.67	119	016.37
Boulder-Rootwad/Bar	01	004.17	011	001.51
Boulder/Hardpan	01	004.17	033	004.54
Boulder/Rootwad	01	004.17	023	003.16
Cobble/Cobble	02	008.33	106	014.58
Cobble/Bar	01	004.17	023	003.16
Vegetation/Vegetation	01	004.17	013	001.79
Totals 11 = n	24	100.00	727	100.00

Depth embeddedness in low gradient riffles was light (Table 60).

Table 60. Depth of embeddedness in low gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1	24	100	727	100

Low gradient riffles are generally associated with steep banks in upper Mark West Creek (Table 61).

Table 61. Low gradient riffle bank slopes during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
90/90	01	015	002.27
90/45	01	030	004.53
90/15	01	033	004.98
90/5	03	056	08.46
90/2	01	037	005.59
90/1	03	051	007.70
75/10	01	075	011.33
60/15	02	044	006.65
60/5	01	059	008.91
45/45	01	026	003.93
30/30	01	013	001.96
15/10	02	070	010.57
5/5	01	009	001.36
1/1	03	144	021.75
Totals 14 = n	22	662	100

Low gradient riffle areas were either low or high in area embeddedness (Table 62).

Table 62. Proportion of low gradient riffle area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

Rank (code)	Frequency (Number)	Cumulative Length (feet)	Percent Length (%)	Mean
1	08	270	037.14	
2	05	147	020.22	
3	04	096	013.20	
4	07	214	029.44	
Totals	24	727	100.00	2.35

Only 17% of low gradient riffles had weighted lengths in percent surface fines as great as ten percent (Table 63).

Table 63. Distribution of percent surface fines in low gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.00	01	004.17	011	001.51	00.0	000.00
0.03	20	083.33	643	088.45	19.5	077.08
0.05	01	004.17	030	004.13	01.5	005.93
0.10	02	008.33	043	005.91	04.3	017.00
n = 4	24	100.00	727	100.00	25.3	100.00

Mean percent surface fines for weighted length = 3.48%

Low gradient riffles downstream of Station 1618 had low area embeddedness, while those upstream of Station 1618 had high area embeddedness (Figure 33).

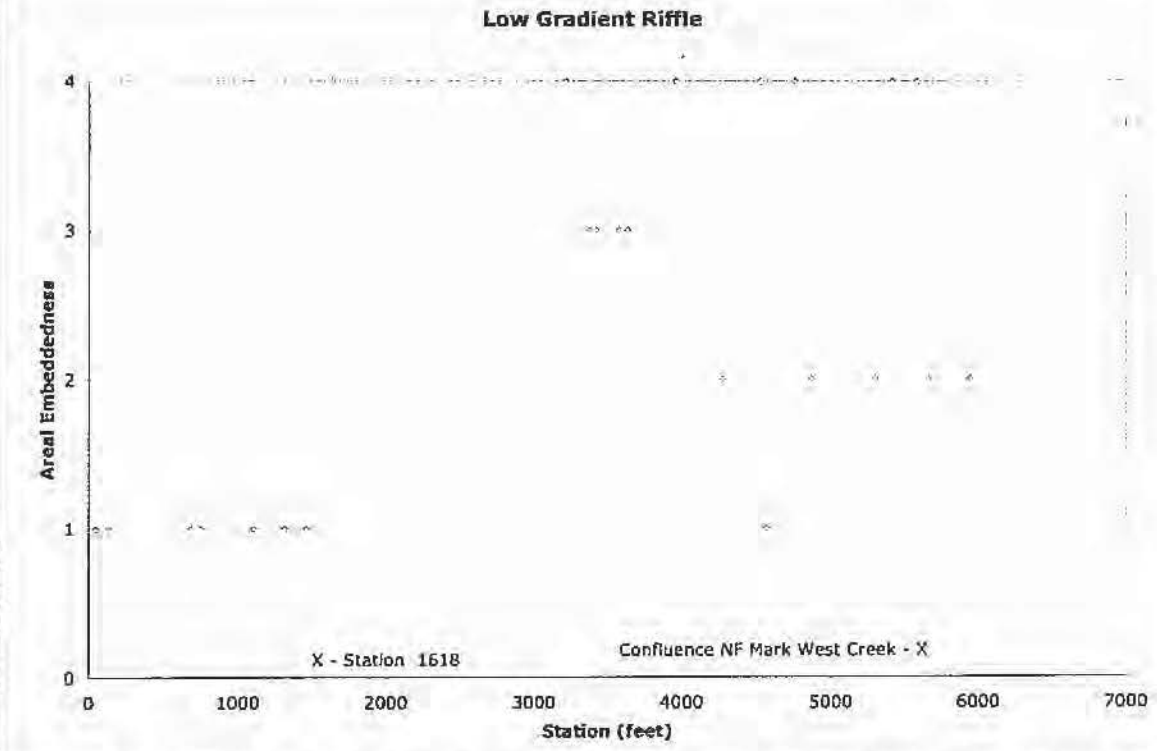

Figure 33. Longitudinal profile of area embeddedness in low gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Low gradient riffles generally had low percent surface fines (Figure 34).

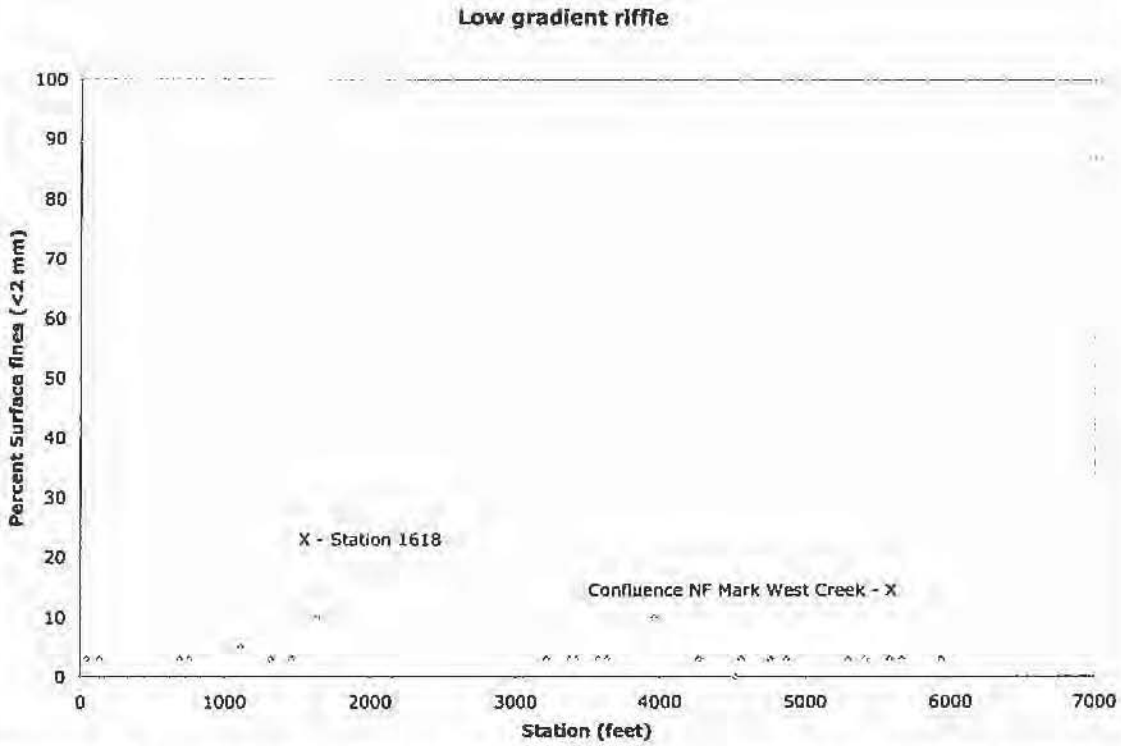

Figure 34. Longitudinal profile of percent surface fines in low gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Depth embeddedness was light (Figure 35).

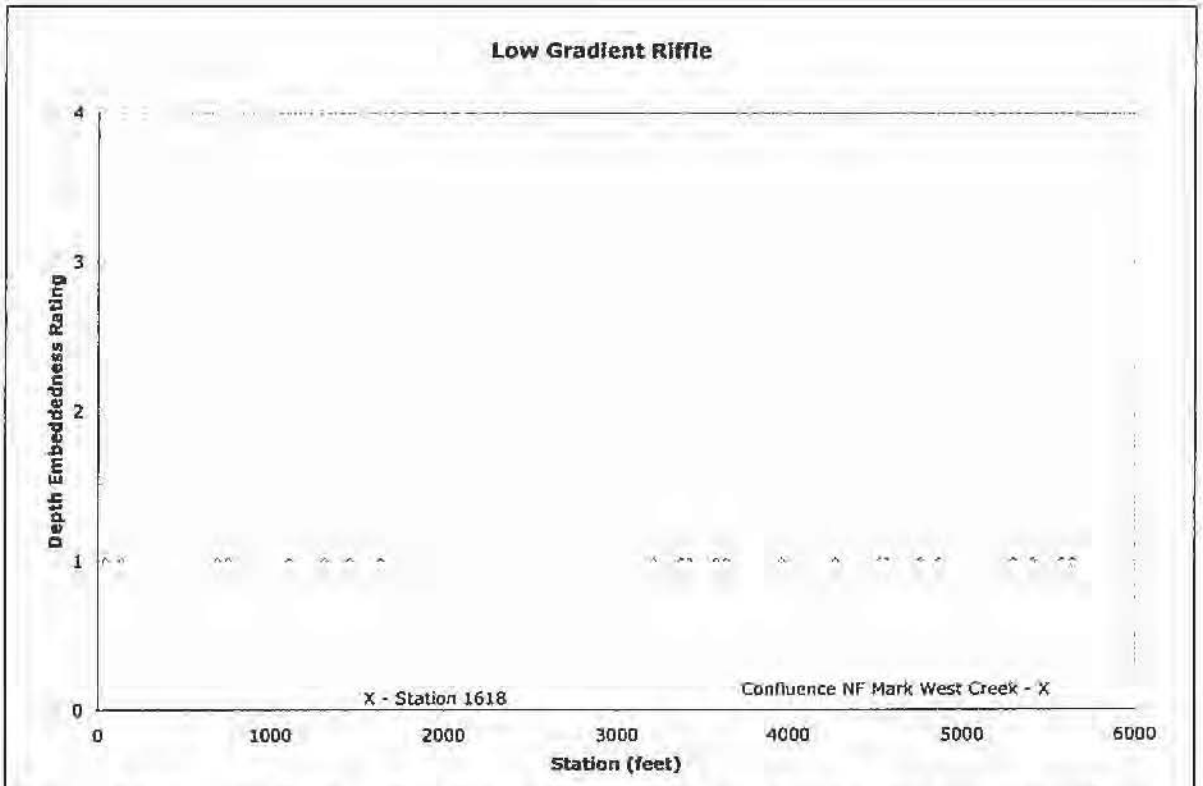

Figure 35. Longitudinal profile of depth embeddedness ratings during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Low gradient riffle habitat quality was poor to fair (Figure 36).

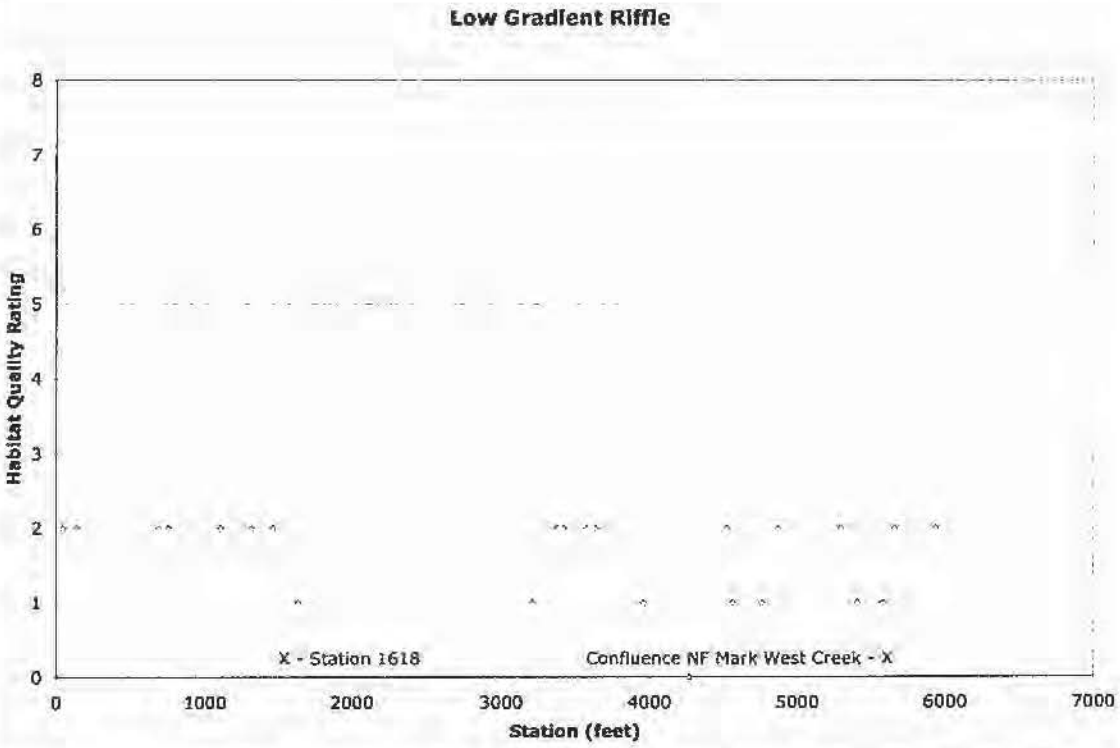

Figure 36. Longitudinal profile of habitat quality ratings in low gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

8. HIGH GRADIENT RIFFLE SUMMARY

Riffles are habitats with gradient. High gradient riffles have a gradient of more than 4%. During this habitat assessment, high gradient riffles were shorter (mean 22.65 v. mean 30.79 feet), narrower (mean 2.44 feet v. mean 3.41 feet), and shallower (mean 0.26 v. mean 0.27 feet) than low gradient riffles. High gradient riffles have higher energy water. Riffles are habitats where fish food is produced (Needham 1938). They are the habitats where aquatic invertebrate abundance is highest, and aquatic invertebrates that thrive there have adaptations that allow them to survive. High gradient riffles occurred throughout the surveyed reach (Figure 37) and although they support aquatic invertebrates, they are typically too shallow to function as steelhead rearing habitat.

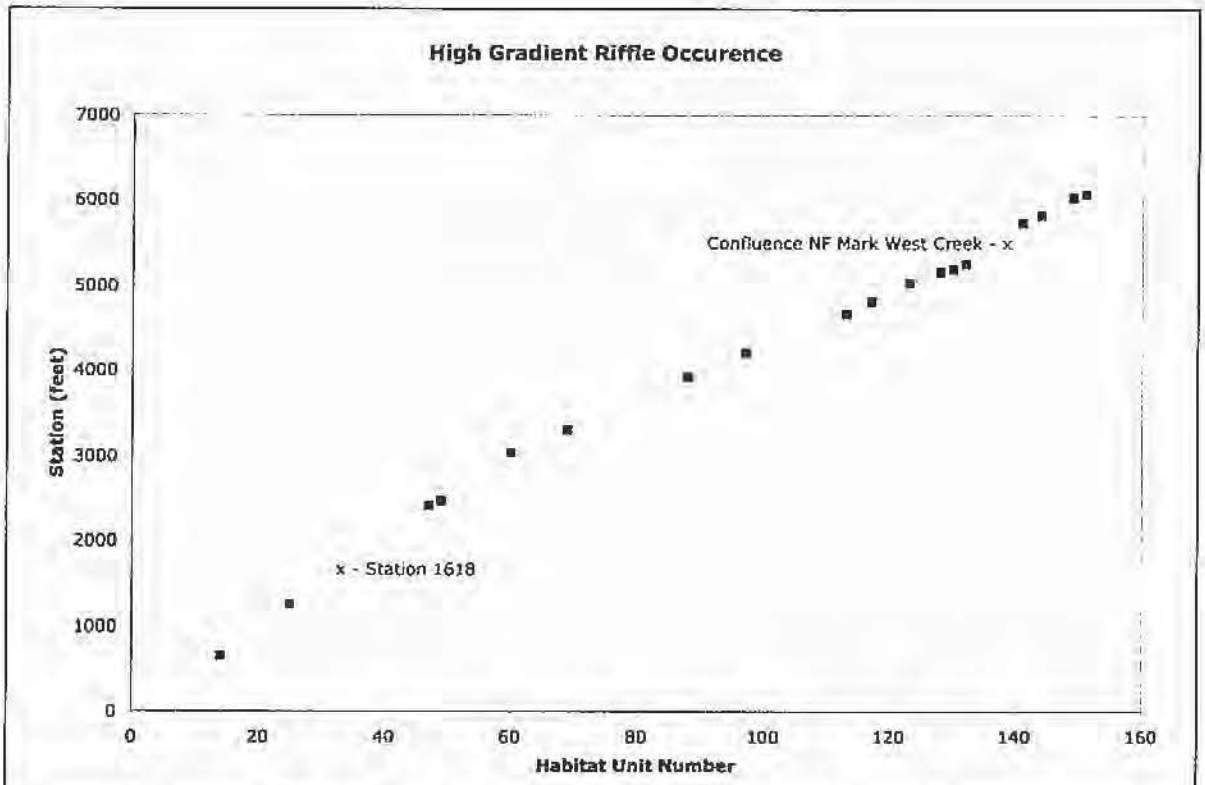

Figure 37. Occurrence of high gradient riffles from Tar Water Bridge to just upstream of NF Mark West Creek during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

High gradient riffles generally had large substrates (Table 64).

Table 64. High gradient riffle substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (Number)	Cumulative Length (feet)	Percent Length (%)
12/10	02	042	010.91
12/7	01	018	004.68
10/11	01	029	007.53
10/9	07	173	044.94
10/8	01	015	003.90
10/7	02	045	011.69
9/10	02	020	005.19
9/7	01	015	003.90
8/9	01	028	007.27
Totals 9=n	18	385	100.00

High gradient riffle banks were stable (Table 65).

Table 65. High gradient riffle bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Rank (Code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1/1	14	077.78	308	080.00
1/2	03	016.67	063	016.36
2/2	01	005.56	014	003.64
Totals 3 = n	18	100.00	385	100.00

Bedrock and Boulder were major components of high gradient riffle banks (Table 66).

Table 66. High gradient riffle bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components	Frequency (number)	Percent Frequency (feet)	Cumulative Length (%)	Percent Length (feet)
Bedrock/Bedrock	02	011.11	033	008.57
Bedrock/Boulder	06	033.33	122	031.69
Bedrock/Tree	01	005.56	018	004.68
Bedrock/Bar	01	005.56	016	004.16
Boulder/Boulder	04	022.22	071	018.44
Boulder/Hardpan	01	005.56	042	010.91
Boulder/Cobble	01	005.56	029	007.53
Cobble/Trees	01	005.56	028	007.27
Cobble/Vegetation	01	005.56	026	006.75
Totals 9 = n	18	100.00	385	100.00

Depth of embeddedness in high gradient riffles was light (Table 67).

Table 67. Depth of embeddedness in high gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)	Weighted Length	Mean
0	01	005.88	018	004.68	0	
1	15	088.24	352	091.43	352	
2	01	005.88	015	003.90	030	
Totals 3 = n	17	100.00	385	100.00	382	0.99

High gradient riffles were associated with steep sloping banks (Table 68).

Table 68. High gradient riffle bank slopes during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
90/90	1	015	3.90
90/5	5	105	27,28
90/1	3	059	15.32
85/5	1	028	7.27
60/60	1	018	4.68
60/30	1	024	6.23
45/5	2	029	7.53
15/10	1	042	10.91
1/1	3	065	16.88
Totals 9 =n	18	385	100

High gradient riffles responded widely to area embeddedness (Table 69).

Table 69. Proportion of high gradient riffle area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

Rank (code)	Frequency (Number)	Cumulative Length (feet)	Percent Length (feet)	Mean
1	04	099	025.71	
2	07	161	041.82	
3	06	110	028.57	
4	01	060	015.58	
Totals	18	385	100.00	2.11

A little over 20% of high gradient riffles had weighted lengths greater than ten percent (Table 70).

Table 70. Distribution of percent surface fines in high gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.00	01	005.56	24	006.23	00.00	000.00
0.03	16	088.89	335	087.01	10.05	079.45
0.10	01	005.56	26	006.75	02.60	020.55
n = 3	18	100.00	385	100.00	12.65	100.00

Mean percent surface fines weighted length = 3.29%

There was low area embeddedness downstream of Station 1618 and higher embeddedness upstream, but there was also low embeddedness upstream (Figure 38).

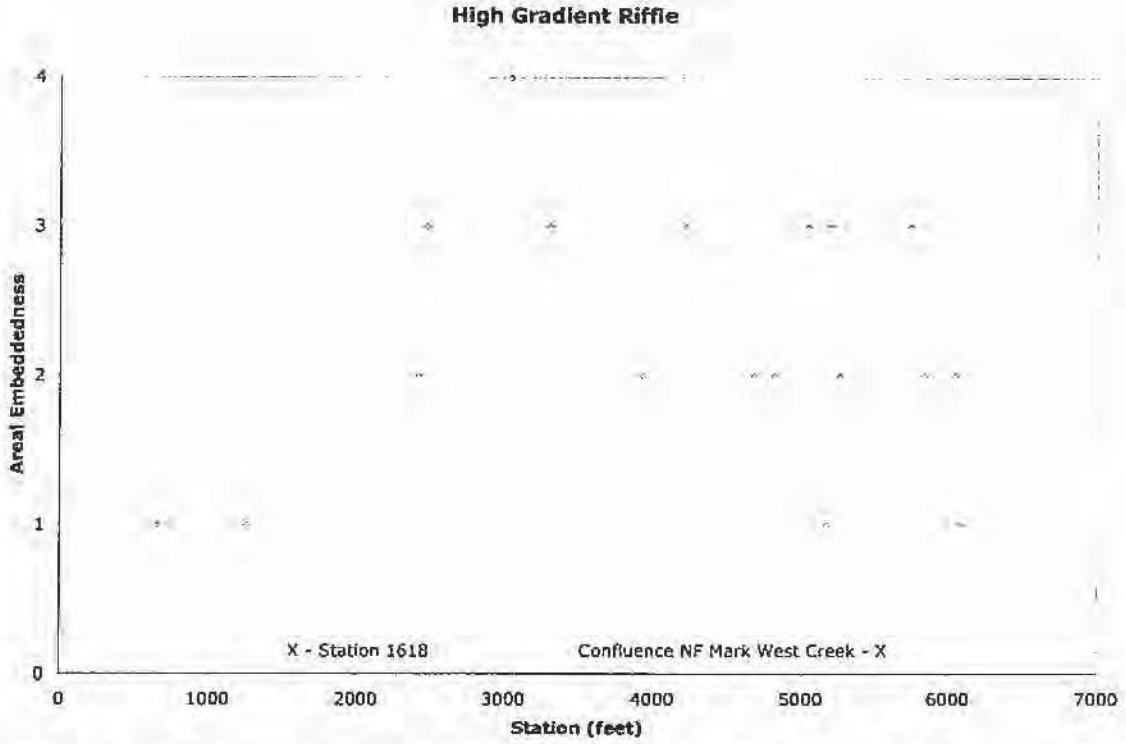

Figure 38. Longitudinal Profile of area embeddedness in high gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October, 2008.

Percent surface fines for high gradient riffles was generally low (Figure 39).

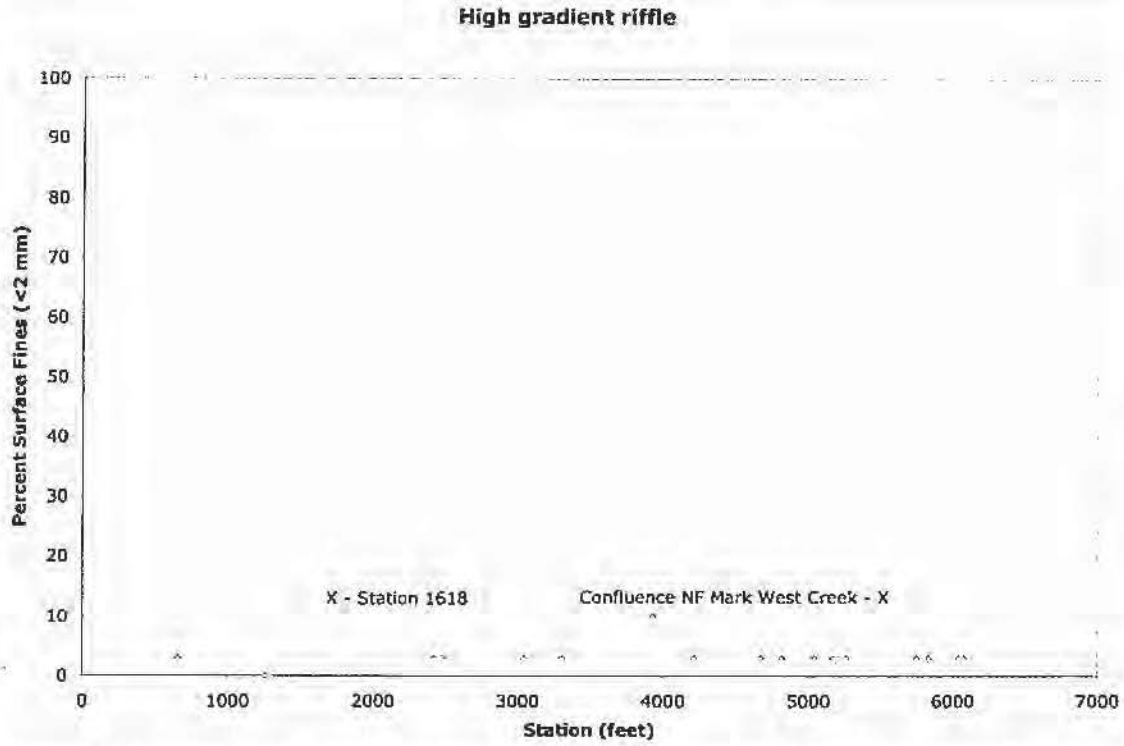

Figure 39. Longitudinal profile of percent surface fines in high gradient riffle during low streamflow conditions in upper Mark West Creek, Sonoma County, California October, 2008.

Depth embeddedness was generally light (Figure 40.

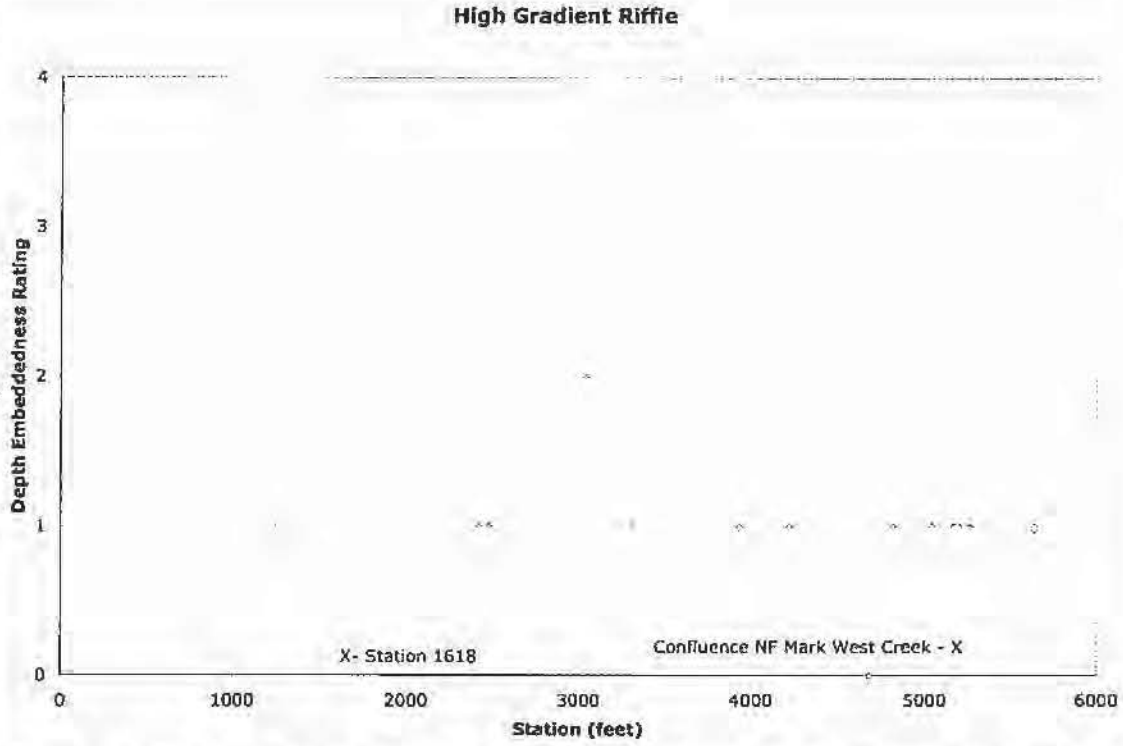

Figure 40. Longitudinal profile of depth embeddedness ratings in high gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

High gradient habitat quality was poor to fair (Figure 41).

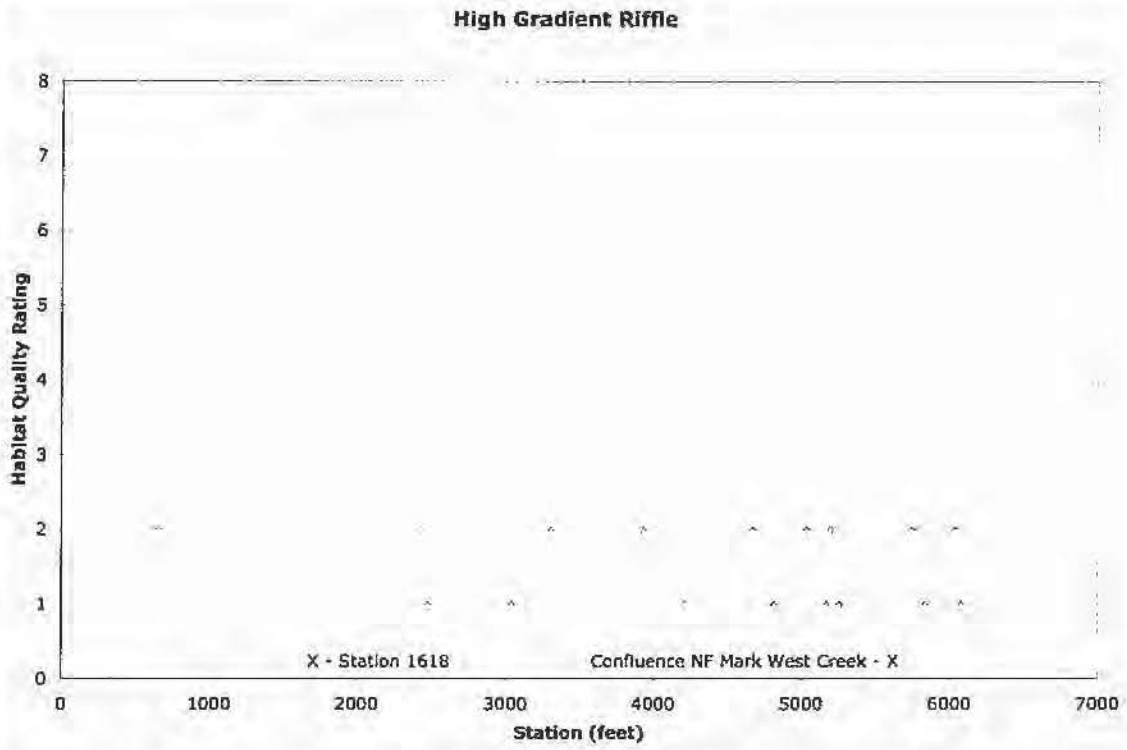

Figure 41. Longitudinal profile of habitat quality ratings in high gradient riffles during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

9. CASCADE SUMMARY

Cascade is the steepest gradient habitat possible, without being a falls. In upper Mark West Creek it was the shortest (mean 9.73 feet), narrowest (mean 2.45 feet), and shallowest (mean 0.16 feet) habitat. Water is concentrated in this habitat, and it has the highest velocity and energy of the habitats we assessed. Cascades were observed after the first third of the survey (Figure 42). Cascades may provide steelhead-rearing habitat, if the cascades have small pools. Only specially adapted aquatic invertebrates live here.

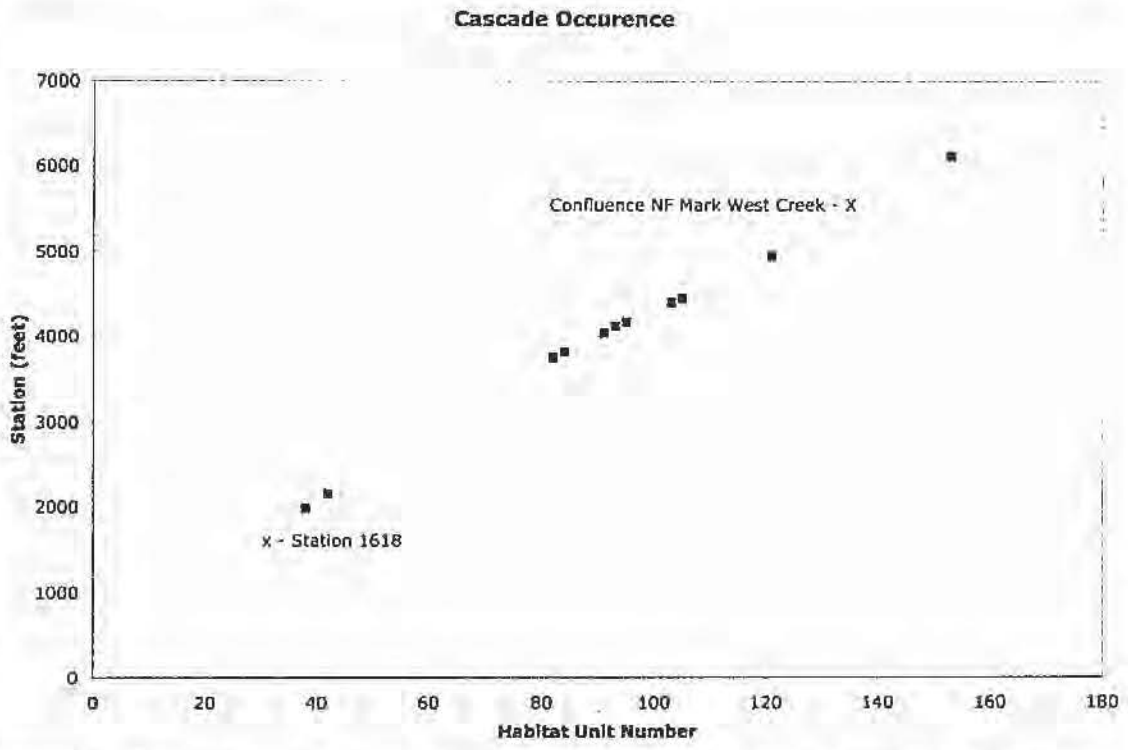

Figure 42. Occurrence of cascades from Tar Water Bridge to just upstream of NF Mark West Creek during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate composition in cascades was large (Table 71).

Table 71. Cascade substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (Number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
12/10	01	009.09	005	004.67
11/10	02	018.18	024	022.43
11/9	01	009.09	027	025.23
10/11	02	018.18	014	013.08
10/10	03	027.27	009	008.41
10/9	02	018.18	028	026.17
Totals 6 = n	11	100.00	107	100.00

Cascade banks were stable (Table 72).

Table 72. Cascade bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Rank (Code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1/1	10	090.91	097	090.65
1/2	01	009.09	010	009.35
Totals 2 = n	11	100.00	107	100.00

Bedrock and boulder were major components of banks adjacent to cascades (Table 73).

Table 73. Cascade bank components during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Components	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	03	027.27	022	020.56
Bedrock/boulder	04	036.36	044	041.12
Bedrock/Rootwad	02	018.18	015	014.02
Boulder/Boulder	02	018.18	026	024.30
Totals 4 = n	11	100.00	107	100.00

Embeddedness depth in cascades was light (Table 74).

Table 74. Depth of embeddedness in cascades during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
0	07	063.64	041	038.32
1	04	036.36	066	061.68
Totals 2 = n	11	100.00	107	100.00

Cascade bank slopes were steep (Table 75).

Table 75. Cascade bank slopes during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent Length (%)
90/90	02	008	007.48
90/80	01	014	013.08
90/15	01	005	004.67
90/5	02	038	035.51
90/1	03	016	014.95
1/1	02	026	024.30
Totals 6=n	11	107	100.00

Cascade area was generally light in embeddedness (Table 76).

Table 76. Proportion of cascade area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%.

Rank (code)	Frequency (Number)	Cumulative Length (feet)	Percent Length (%)	Mean
1	04	055	051.40	
2	06	049	045.80	
3	01	003	002.80	
4	00	000	000.00	
Totals 3 = n	11	107	100.00	1.51

All but one cascade had a 3% percent surface fines rating (Table 77).

Table 77. Distribution of percent surface fines in cascades during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
0.00	01	9.090	014	013.08	0.00	0.00
0.03	10	90.91	093	086.92	2.79	100.00
n = 2	11	100.00	107	100.00	2.79	100.00

Cascade mean percent surface fines weighted length = 2.61%

Cascades had low to moderate area embeddedness (Figure 43).

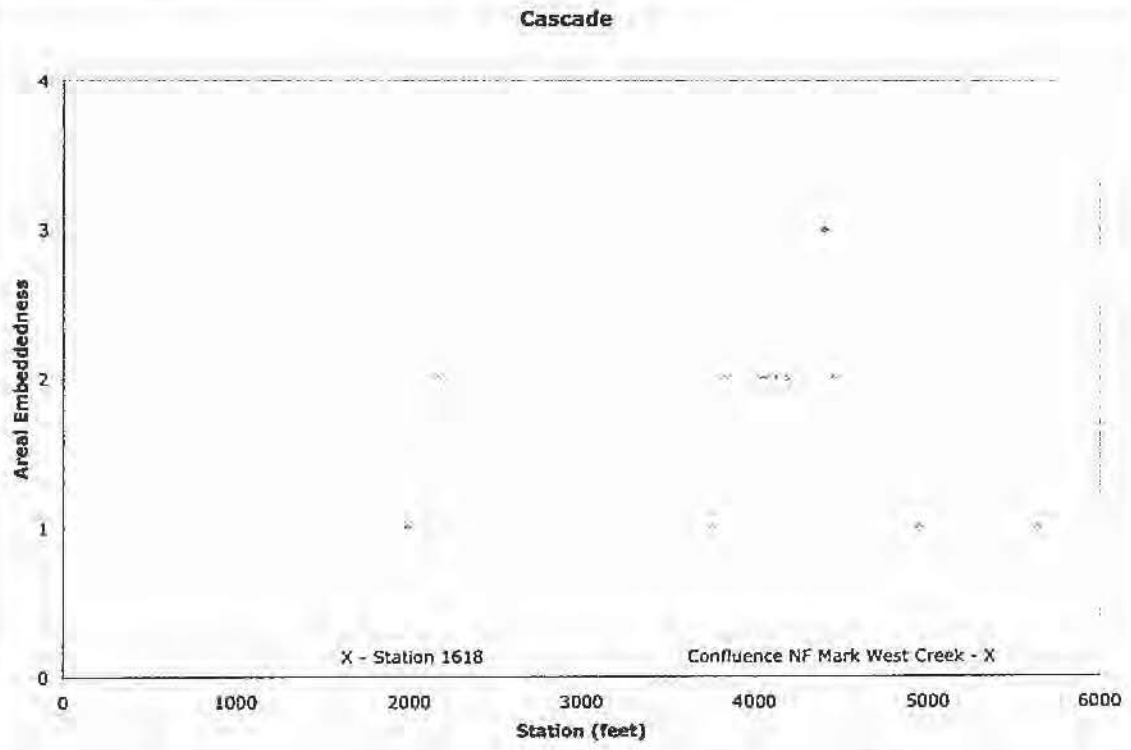

Figure 43. Longitudinal profile of area embeddedness in cascades during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent surface fines in cascades was low (Figure 44).

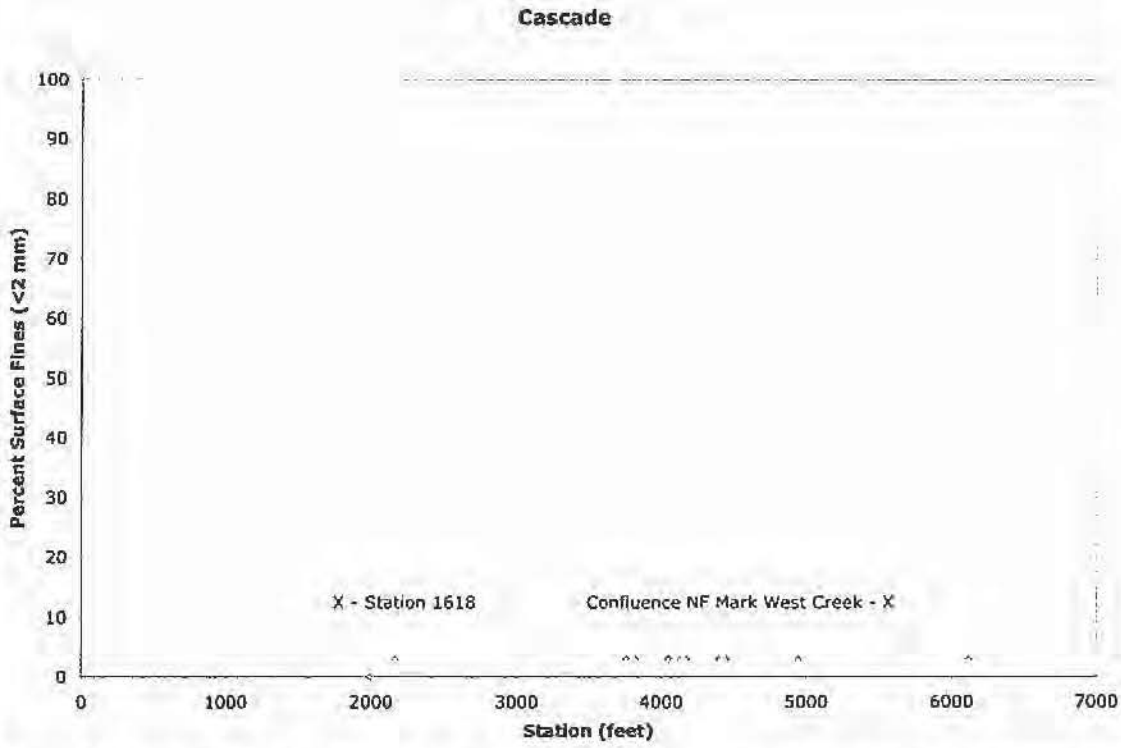

Figure 44 Longitudinal profile of percent surface fines in cascades during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Depth embeddedness ratings were between none and light in cascades (Figure 45).

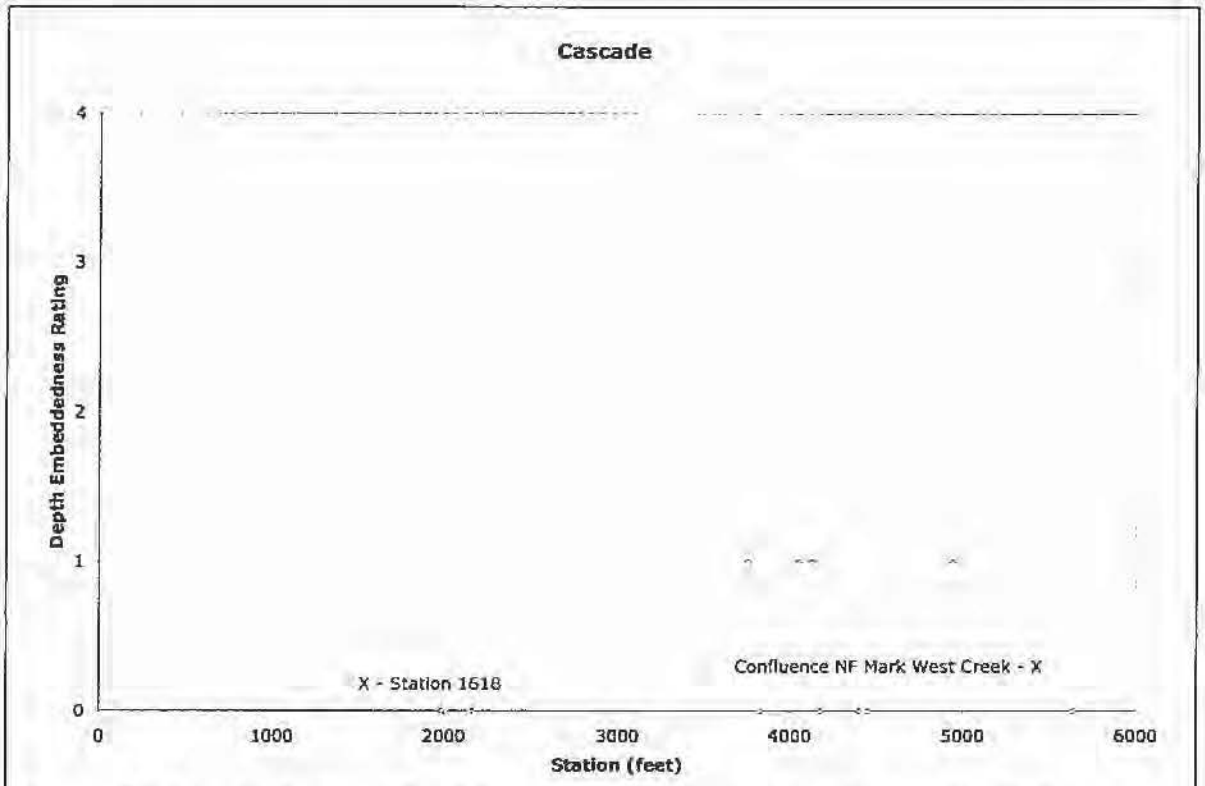

Figure 45. Longitudinal profile of depth embeddedness ratings in cascades during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Cascade habitat quality was poor to none (Figure 46).

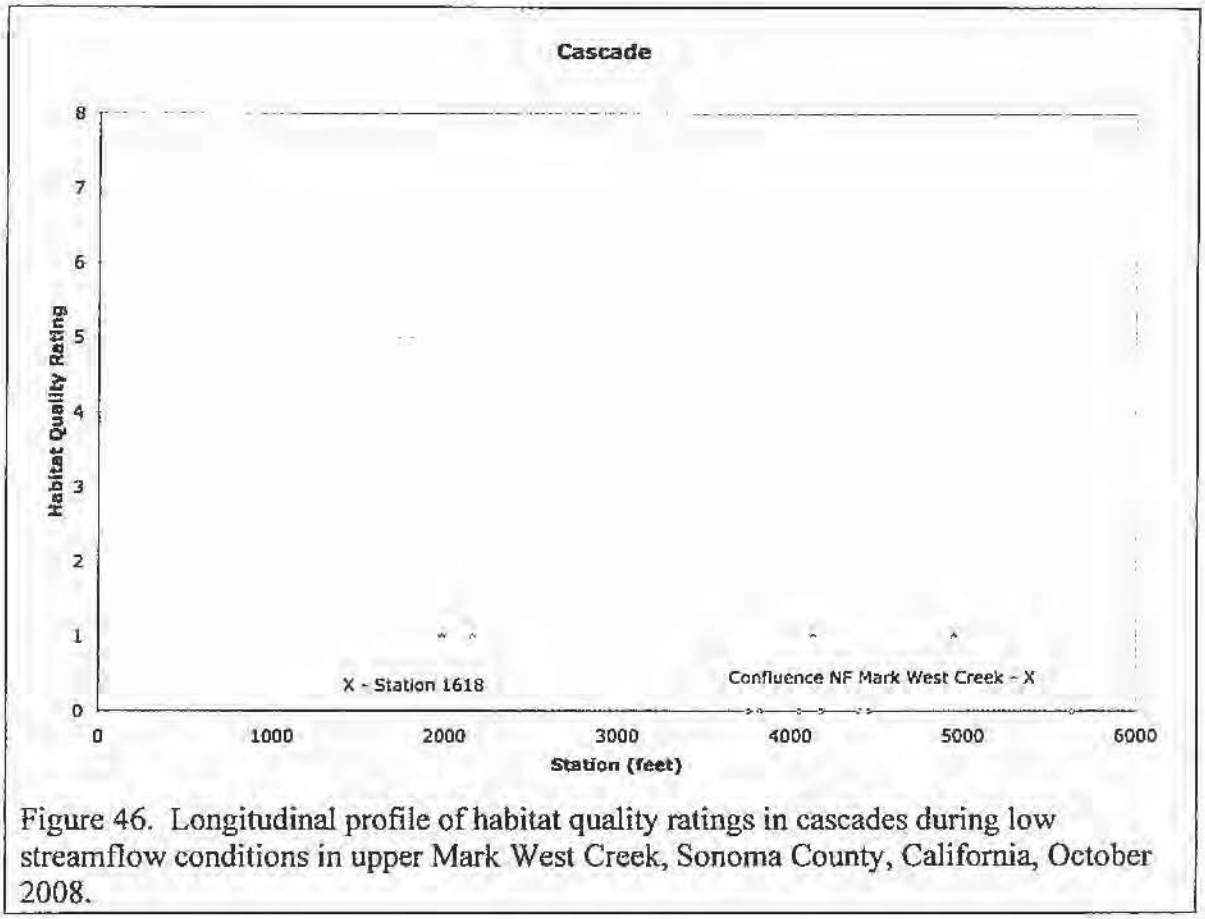

Figure 46. Longitudinal profile of habitat quality ratings in cascades during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

10. DRY SUMMARY

In October 2008, under low streamflow conditions, Li and Parkinson observed that there were four habitat units where sediment deposition caused the interruption of continuous surface streamflow. They called these units DRY. In three instances, the sediment deposition was associated with the tail of a pool, which is where sediment deposition occurs during flow recession. Flow discontinuity occurs when the elevation of the sediment deposition exceeds the water surface elevation of the declining streamflow. The fourth DRY unit occurred between a low gradient riffle upstream and a pool downstream. The base of the riffle consisted of large boulders that created boulder shadows for sediment deposition. All DRY habitat units were in the upper reach of the surveyed creek (Figure 47). DRY units cannot support aquatic invertebrates or fish. DRY units also interrupt the energy flow and fish movement. In all cases, the DRY habitat units were complete migration barriers.

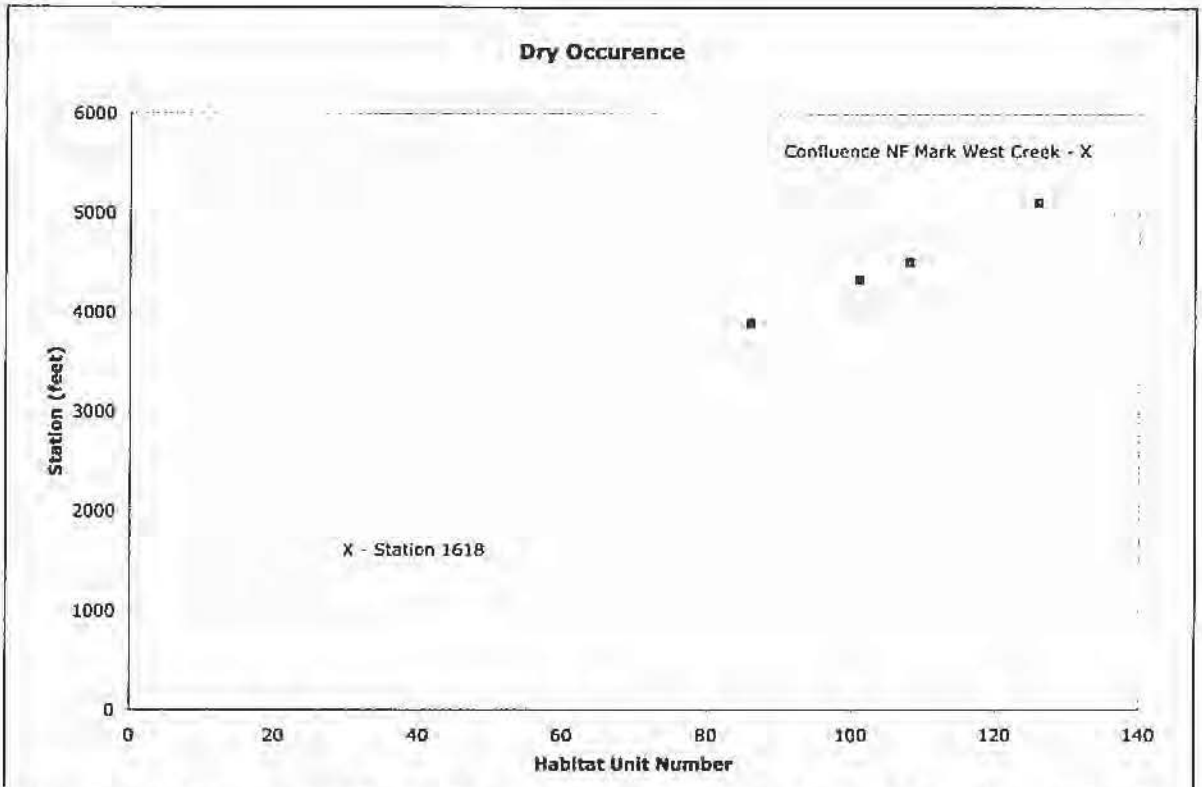

Figure 47. Occurrence of DRY habitat units between Tar Water Bridge to just upstream of NF Mark West Creek during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

DRY substrate sizes were small gravel and sand (Table 78).

Table 78. DRY habitat unit substrate composition during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Substrate Distribution Type Dominant/subdominant (Wentworth Scale)	Frequency (Number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
4/3	4	100	57	100.00

Banks of the DRY habitat units were stable (Table 79).

Table 79. DRY bank stability during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Bank Rank (Code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
1/1	3	075.00	54	094.74
1/2	1	025.00	03	005.26
Totals 2 = n	4	100.00	57	100.00

DRY bank components were largely bedrock (Table 80).

Table 80. DRY bank components under low streamflow conditions in upper Mark West Creek, Sonoma County, California, and October 2008.

Bank Components	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
Bedrock/Bedrock	1	025	23	040.35
Bedrock/Boulder	2	050	31	054.39
Boulder-RW/Bar	1	025	03	005.26
N = 3	4	100	57	100.00

Depth embeddedness in DRY habitat units was heavy (Table 81).

Table 81. Depth of embeddedness in DRY habitat units during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Embeddedness Depth (code)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Length (%)
4	4	100	157	100

Bank slopes adjacent to the DRY habitat units were steep (Table 82).

Table 82. DRY bank slopes, during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

	Left Bank/Right Bank slope angle (degrees)	Frequency (number)	Cumulative Length (feet)	Percent (%)
	90/90	1	23	040.35
	90/5	1	25	043.86
	40/90	1	06	010.53
	1/2	1	03	005.26
Totals	4=n	4	57	100.00

By definition, area embeddedness in DRY units was extremely high (Table 83).

Table 83. Proportion of DRY area covered by sediment during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008. Where 1 = 25% or less, 2 = 26% to 50%, 3 = 51%-75% and 4 = 76% to 100%

	Rank (code)	Frequency (Number)	Cumulative Length (feet)	Percent Length	Mean
	1	0	0	000	
	2	0	0	000	
	3	0	0	000	
	4	4	57	100	
Totals	1 = n	4	57	100	4.00

Percent fines in DRY units was 100% (Figure 84)

Table 84. Distribution of percent surface fines in DRY units during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent Fines (%)	Frequency (number)	Percent Frequency (%)	Cumulative Length (feet)	Percent Cumulative Length (feet)	Weighed Length (feet)	Percent Weighted Length (%)
100	4	100.00	57	100.00	57	100.00
n = 1	4	100.00	57	100.00	57	100.00

Mean percent surface fines weighted length = 100%

Area embeddedness in DRY habitat units was high (Figure 48).

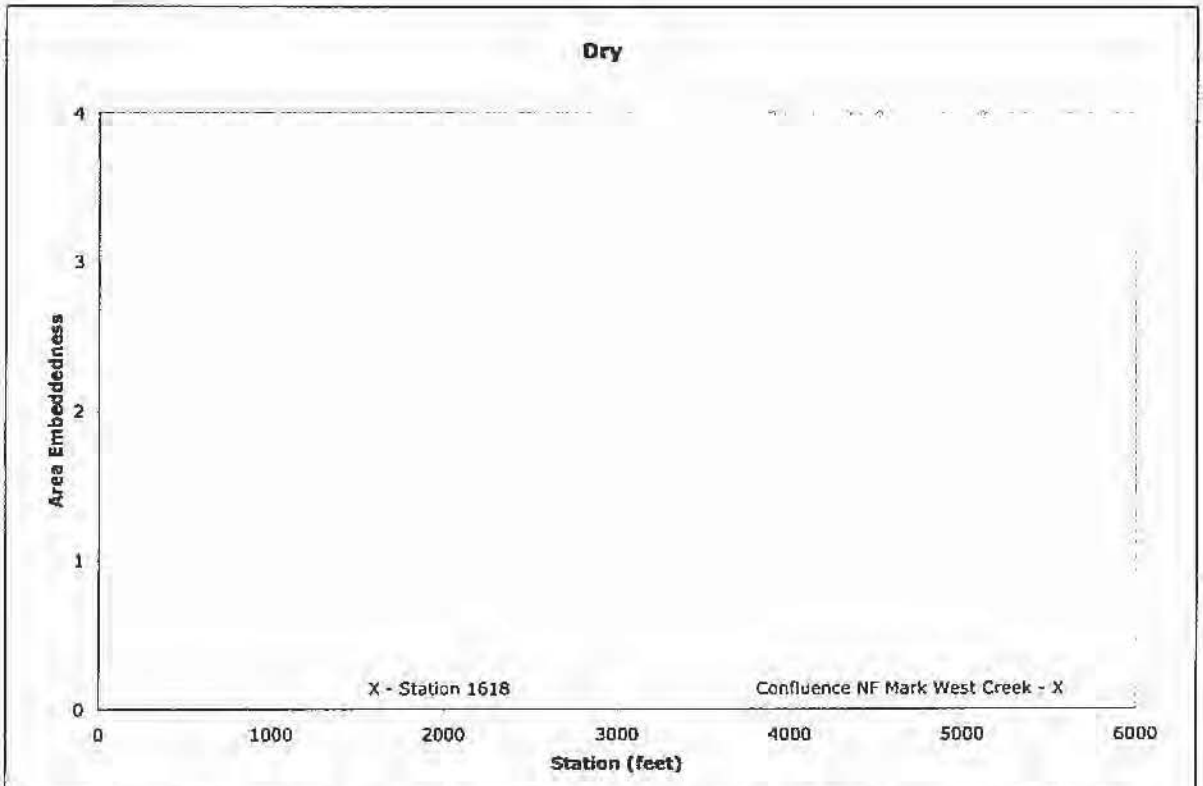

Figure 48. Longitudinal profile of area embeddedness in DRY habitat units during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Percent surface fines were maximized in the upper reaches of Mark West Creek (Figure 49).

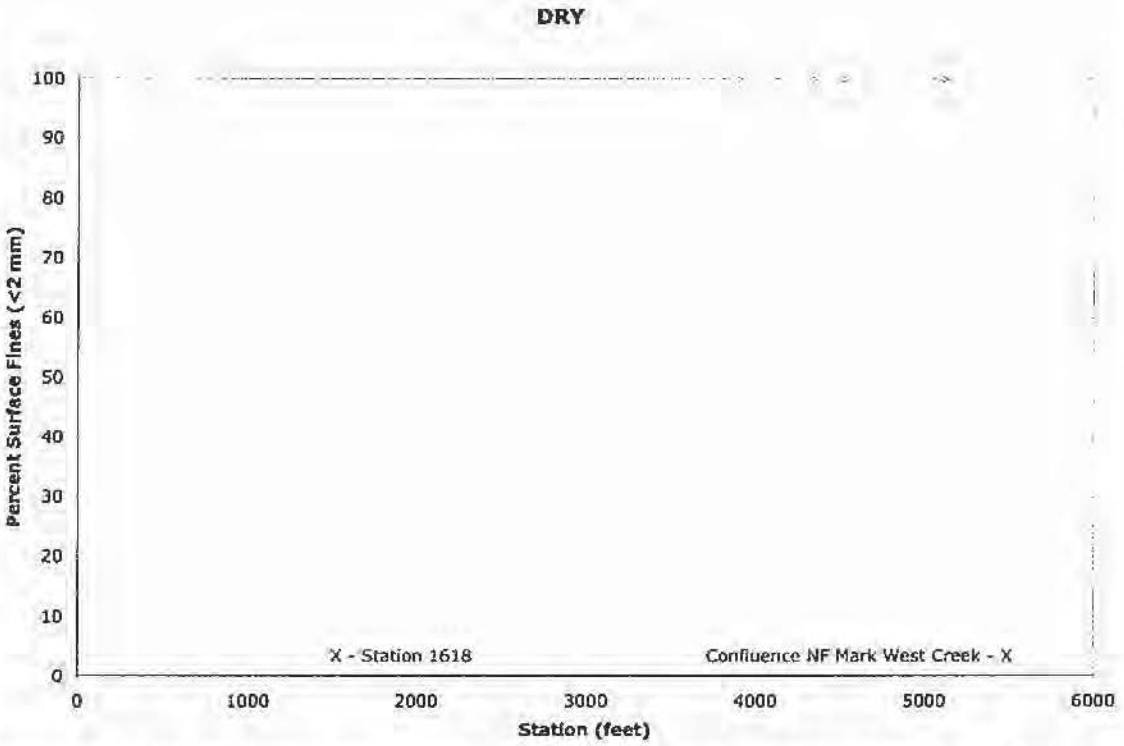

Figure 49. Longitudinal profile of percent surface fines in DRY habitats during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Depth embeddedness was high in DRY habitats (Figure 50).

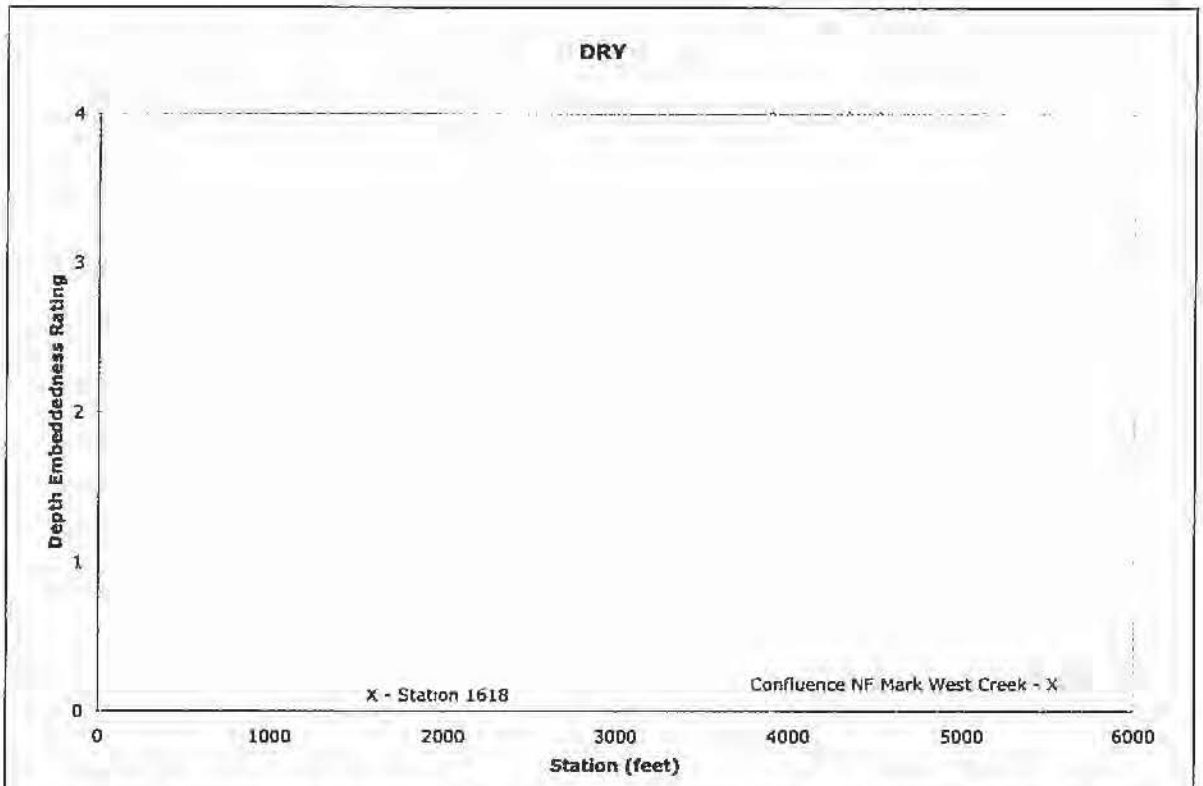

Figure 50. Longitudinal profile of depth embeddedness ratings in DRY habitats during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

There is no fish habitat in DRY habitat (Figure 51).

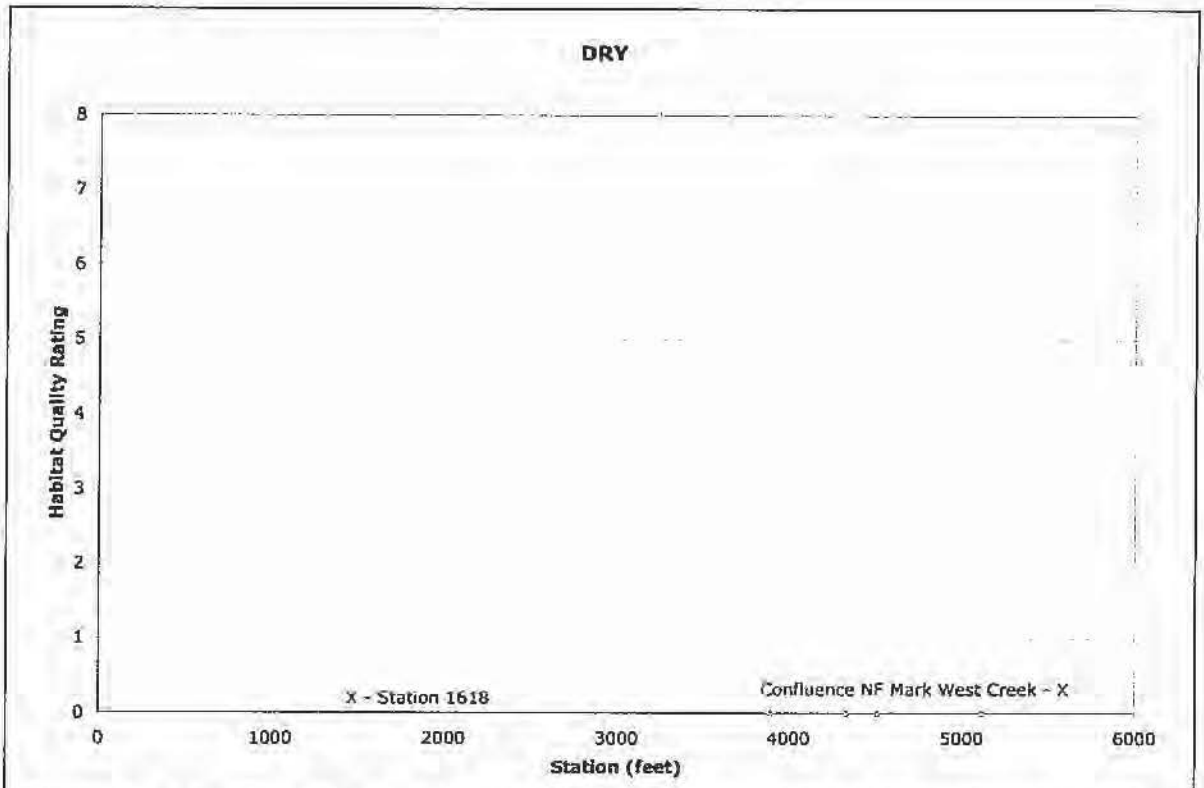

Figure 51. Longitudinal profile of habitat ratings in DRY habitat during low streamflow conditions in upper Mark West Creek, Sonoma County, California, October 2008.

Juvenile migration impediments

We found five juvenile steelhead migration impediments in upper Mark West Creek during the habitat inventory. One impediment was located at a cascade at station 3757; it consisted of a vertical jump of about two feet with insufficient stream depth for a jumping pool. There are potentially more of these types of impediments at places where boulder-field plugs occur. The other four were the DRY habitat units. These are impassable barriers because neither the length nor depth of water is sufficient and there are dry areas. (Figure 52).

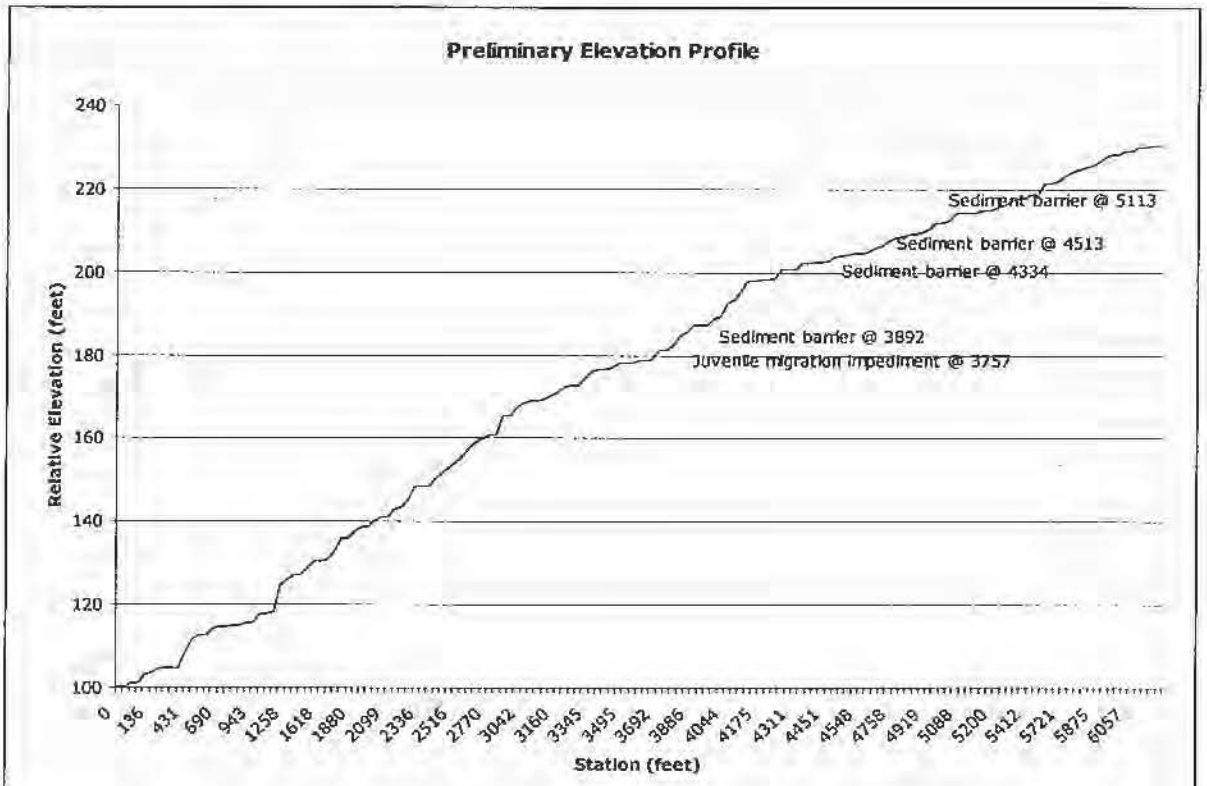

Figure 52. Juvenile steelhead migration impediments during low streamflow conditions in upper Mark West Creek, Sonoma Count, California, October, 2008.

STEELHEAD SPAWNING ACTIVITY

We recorded two types of steelhead spawning activity. First, "Spawning Observed" was noted at locations where spawning behavior was seen, but there was no physical evidence of a redd (spawning nest). "Redd" was noted when evidence of a redd, such as a nest mound, imbricated substrate, nest pit, *etc.*, was identified. Parkinson noted that the redds were not in typical locations, such as the tails of pools, but were in locations of lowest scour or in locations where the gravels were shallow (Figure 53).

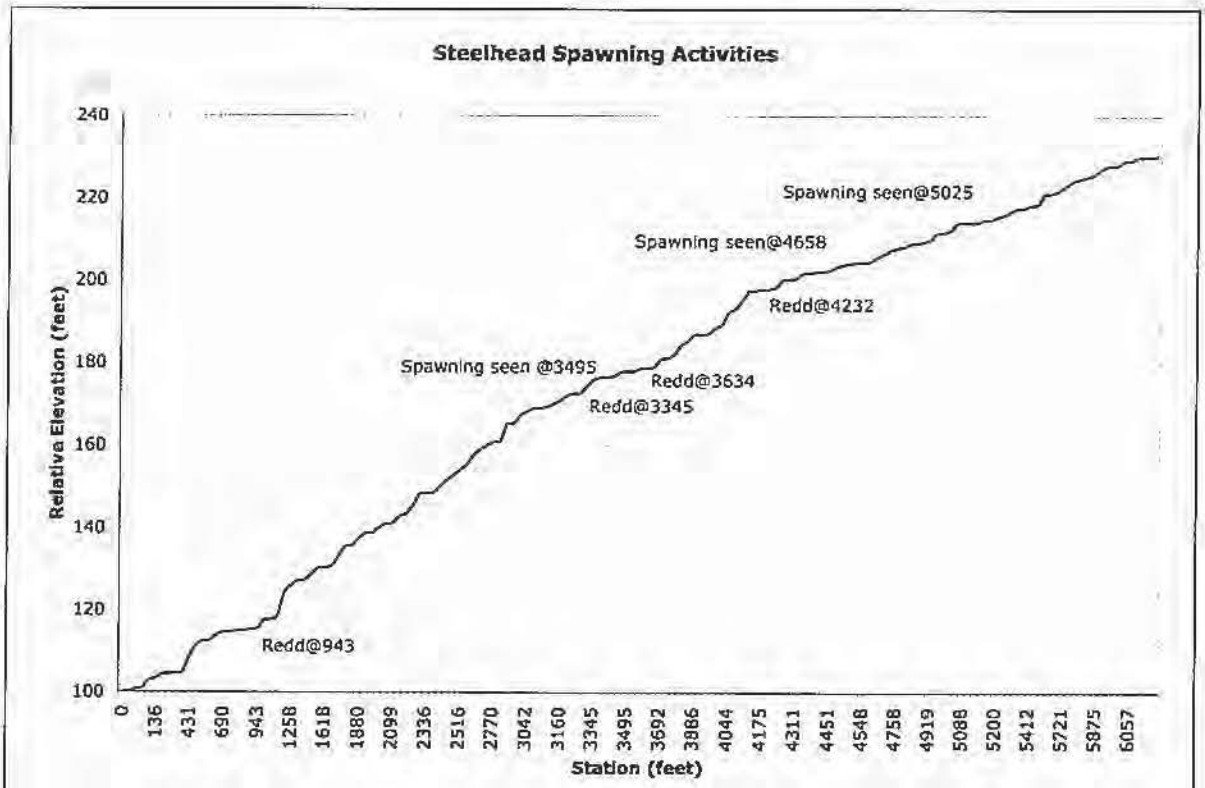

Figure 53. Evidence of steelhead spawning behavior in upper Mark West Creek for the 2007 water year.

TRIBUTARY SEDIMENT CONTRIBUTION

We looked for accumulations of sediment at each of the confluences of tributaries to upper Mark West Creek and found no indication of significant sediment augmentation other than that from NF Mark West Creek.

JUVENILE STEELHEAD ABUNDANCE

While walking upstream during the course of the habitat inventory survey, we periodically spooked juvenile steelhead. Their occurrence was noticeably less than Li's previous two visits.

STRANDED ADULT STEELHEAD

We found five stranded steelhead adults and one steelhead skeleton during the habitat survey (Figure 54). They ranged in size from 24 inches Fork length to 30 inches Fork length.

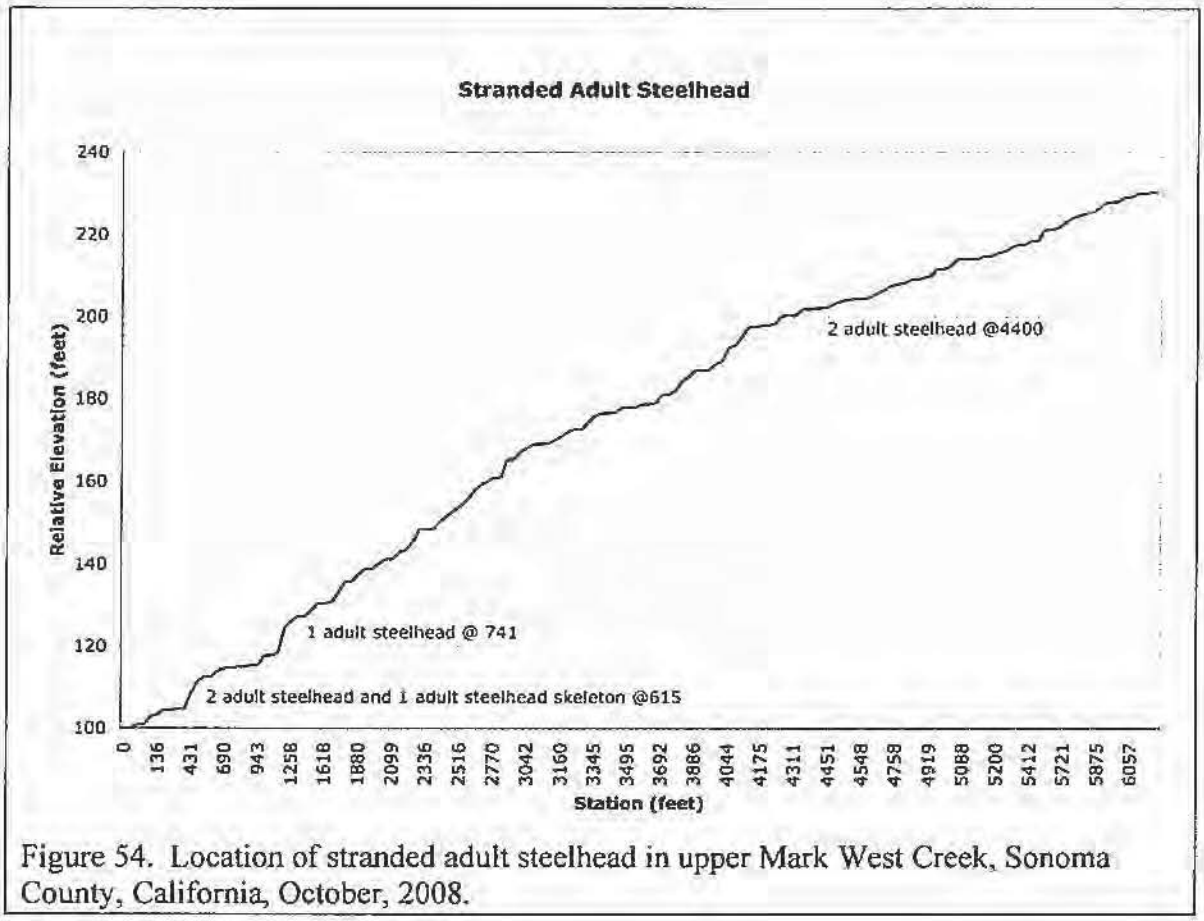

Figure 54. Location of stranded adult steelhead in upper Mark West Creek, Sonoma County, California, October, 2008.

CONCLUSIONS

A habitat inventory is the appropriate first step in watershed studies. It describes the spatial variability of the study area and facilitates subsequent studies. When reviewing our findings, please note:

1. Our findings are generally limited to the reach we surveyed. However, since bedload is carried downstream by streamflow, areas downstream of the surveyed reach will be adversely affected as moving sediment reaches them.

2. This habitat type classification depends upon the appearance of the water surface within the habitat unit. Depending upon slope, some habitat types will transform into others, as streamflow levels change. This survey was performed under very low streamflow conditions, around 0.01 cfs. We noted that the behavior of the sediment was very similar within the step-pool habitats. At this very low flow, they may function very similarly.

3. Upper Mark West Creek is a bedrock stream since it is lined with bedrock for much of its channel. The boulders and smaller substrate rocks lying on top of the bedrock provide alluvial elements that form some of the habitat types. Consequently, it also has characteristics of an alluvial stream. Depending on local conditions, Mark West Creek will transport sediment differently.

4. A habitat inventory must be interpreted through the conditions that shaped it. This habitat inventory describes conditions during low streamflow, with artificially high (anthropogenic) sediment loading, and two drier than normal water years. This low streamflow period creates the worst case conditions for the effects of sedimentation.

5. These data were based on rapid assessments during the course of walking through the stream corridor. As such, they are more qualitative and large scale, than quantitative and finer scale. More detailed information is required for quantitative analyses. However, the degree of habitat disturbance was so high that additional quantitative studies are not necessary to conclude that great damage has occurred.

We use three concepts to help interpret data and understand sediment transport in the different habitat types. First, the different habitats behave differently, depending upon whether streamflow level is increasing or decreasing. Pools are formed by hydraulic scour that lifts substrate and carries it downstream. Scour occurs only with increasing streamflow levels. As streamflow level recedes during the spring, pools become increasingly depositional and become sediment traps.

In contrast, riffles are known for their erosional nature, yet that characteristic typically only occurs when streamflow levels are decreasing. Riffles are actually depositional during periods of increasing streamflow levels; they collect substrate from the bedload.

Second, under most circumstances, the same amount of water flows through adjacent habitat units, i.e., a pool and an adjacent riffle have the same flow, but express it differently. This is known as flow continuity. The reason habitat types look different is due to differences in channel width, channel depth, stream velocity, size of substrate and local gradient. In particular, sediment will travel through different habitats differently depending on its size and streamflow magnitude, frequency, and duration. Third, streamflow is the agent that transports sediment downstream. There is a direct relationship between streamflow energy and the particle size that can be transported.

Although Mark West Creek is a major contributor of sediment in the Laguna-Mark West Drainage because it is steep with a high level of natural erosion (Blatt 2001), the most significant factor in this habitat inventory survey was the extraordinary amount of anthropogenic sediment.

This sediment was released to NF Mark West Creek thence upper Mark West Creek as a consequence of land development activities. We know of two properties that have recently spilled sediments into NF Mark West Creek, These properties were a short distance from its confluence with upper Mark West Creek. The Minton property spilled sediment into NF Mark West Creek in 2004. Sediment from this spill created a debris dam at station 4365 of this habitat inventory. We estimated this debris dam contained about 500 cubic yards of sediment. Additional sediments from this property also slid onto St. Helena Road and closed it several times during 2003-2004. As a result, Sonoma County posted multiple notices of violation. A storm in December 2005 broke the debris dam.

The second sediment source was the Cornell property. There was a 10,000 cubic yard landslide which washed into NF Mark West Creek during the 2005-2006 winter season. Landslide deposits were observed being washed from the Cornell property on 245 Wappo Road, Santa Rosa into NF Mark West Creek then into upper Mark West Creek on 31 December 2005. In addition, RGH Consultants (20 October 2006) reported that a landslide that occurred in April 2006 also transported sediments downhill to an intermittent flow ravine (NF Mark West Creek) and partially blocked the drainage. This landslide occurred in an area that had been disturbed by older, larger landslides. Keiran (2008) estimated the sediment amount that entered NF Mark West Creek from the Cornell property was 10,000 cubic yards. This 10,000 cubic yards of sediment was the overriding causative factor in the adverse effects we observed in the quality of steelhead habitat in upper Mark West Creek. The amount of this sediment material makes it unnecessary to conduct quantitative studies to establish adverse effect. The location of the point source near the Mark West Creek headwaters means that all of Mark West Creek will be adversely affected – because sediment is transported downstream.

Upper Mark West Creek is narrow (mean 5.74 feet wide), entrenched, and steep (between 3% and 4% slope) headwater stream. These parameters typically facilitate high bedload transport rates. Most of the upper Mark West Creek banks are composed of bedrock walls; where bedrock is absent, there is boulder or fully developed vegetation. These

factors lead to high bank stability and reduce streambank sediment contribution to the waterway.

Upper Mark West Creek substrate composition is dominated by bedrock and boulder (Tables 15, 22, 29, 36, 43, 50, 57, 64, 71, 78). The habitat types within this reach are defined by the arrangement of large bed elements resting on the bedrock under the influence of streamflow, channel form, and gradient

In upper Mark West Creek, even with rare habitat types that make comparisons with the other habitat types tenuous, the relationships between stream velocity and the various physical dimensions in the different habitat types were generally consistent with flow continuity.

- Mean length - There is a general relationship between stream velocity and habitat unit length in upper Mark West Creek. The faster the stream velocity, the shorter the habitat length. In this habitat inventory, cascade was the shortest habitat type (9.73 feet), followed by high gradient riffle (22.65 feet), then low gradient riffle (30.79 feet), then run (32 feet), pocket pool (43.33 feet), step-pocket-pool (49.11 feet), step-pool (51.15 feet), pool (52.87 feet) and finally step-run (54.47 feet) [Table 7]. The habitat not in its expected position is step-run. Step-run should have placed between step-pocket pool and step-pool because it is generally faster than step-pool and pool but slower than step-pocket pool.

- Mean width – There was a relationship between stream velocity and habitat unit width. The slower the stream velocity, the wider the habitat unit should be. In this habitat inventory, high gradient riffle was the narrowest habitat type (2.44 feet), followed by cascade (2.45 feet), then low gradient riffle (3.41 feet), pocket-pool (3.83 feet), step-pocket-pool (4.89 feet), run (5.00 feet), step-run (5.45 feet), then step-pool (6.48 feet) and finally pool (9.67 feet)[Table 7]. While the difference is very slight, the habitat out of position in this inventory is cascade. It should be narrower than high gradient riffle. (This habitat inventory measurement is not as precise as 0.01 feet.)

- Mean depth – There was a relationship between habitat depth and stream velocity. The faster the stream velocity, the shallower the habitat should be. Cascade was the shallowest (0.16 feet), followed by high gradient riffle (0.26 feet), then low gradient riffle (0.27 feet), then step-run (0.44 feet), then run (0.45 feet), pocket-pool (0.50 feet), step-pocket pool (0.58 feet), pool (0.95 feet), then step-pool (0.99 feet)[Table 7].

  However, pool and step-pool should trade positions. Mean maximum depths in pools (2.04 feet) were greater than mean maximum depth in step-pools (1.31 feet). This suggests that step-pools have a less scoured shape, *i.e.*, step-pools are more flat in cross-section than pools, allowing step-pool mean depth to be greater than mean pool depth.

Habitat type proportions have a bearing on sediment storage in upper Mark West Creek. There were 19.78% of habitats with falling water characteristics. We expect these habitats to quickly transport fine sediment because of the hydraulic energy of water and slope. Flat-water habitat represented 38.67% of the habitat length. Flat-water consisted of pools (37.11%) and runs (1.56%) that store sediment after the rain season; 40.63% of the habitat was represented by step-habitats (step-pocket-poosl, step-runs, and step-pools) that are mostly flat-water. These habitats act as sediment storage areas when streamflow levels are declining (Table 8). While upper Mark West Creek is nominally steep, most of the reach stores sediment after the storms leave, so the sediment will travel through this reach slower than would be expected.

After two rain seasons, the downstream edge of the 10,000 cubic yard sediment plume from the Cornell landslide was 4020 feet downstream of NF Mark West Creek at station 1618. It is important to define the boundary of the sediment spill so that parameters can be compared inside or outside the landslide sediment zone. We were also fortunate to locate the approximate downstream edge of the Cornell sediment slug.

Based on examination of photographs taken as the sediment release was occurring, we noted that the sediment from the Cornell property had a reddish brown color. The sediment we initially observed at the beginning of the habitat inventory had a grayish cast. When we reached Station 1618, we noted a sudden increase in stored sediment with a reddish brown color. What made detection more apparent to us was that we had just passed a slide area with lower levels of stored sediments. We expected higher levels of deposition downstream from a slide rather than upstream from it, so the presence of more sediment upstream was readily noticeable. We now understand that the sediment slug from the Minton property has its own diagnostic characters. We did not fully appreciate this sediment release until after the habitat inventory was completed, so we were not prepared to look for it. We were not as successful identifying the upstream sediment boundary of the Cornell sediment. We were using the confluence with NF Mark West Creek as the upstream boundary of the sediment spills. Upper Mark West Creek is not pristine and produces amounts of bedload without the sediment slug, thus making the appearance of the upstream edge of the sediment slug less apparent. However, the portion of upper Mark West Creek upstream of NF Mark West Creek was less affected by sediment than the reach of stream affected by the Cornell and Minton sediment contributions.

We used longitudinal profiles to show the effect of sedimentation by location *i. e.*, downstream of station 1618 – the downstream edge of the anthropogenic sediment, between station 1618 and the confluence with NF Mark West Creek at station 5638 where most of the sediment has been stored – and upstream of NF Mark West Creek, which was unaffected by the Minton and Cornell sediment spills.

These comparisons were limited by habitat unit occurrence. There were only three each of run and pocket -pool habitat units. Two of the runs were downstream of station 1618 and one was upstream. All of the pocket-pools and all four of the DRY units were in the

10,000 cubic yard sediment affected reach. Cascades and high gradient riffles were not present downstream of station 1618.

Generally, Area Embeddedness showed low ratings in all habitats downstream of Station 1618, which indicates less adverse effects. There were heavy and severe ratings between Station 1618 and the confluence with NF Mark West Creek, and less severe ratings upstream of NF Mark West Creek. (Figures 3, 8, 13,18, 23, 28, 33, 38, 43, 48). In particular, pools, step-pools, and step-runs not only had large areas covered with sediment, but also had interstitial spaces between the rocks clogged with sediment.

The results from the percent surface fines assessment generally followed Area Embeddedness in the habitats that stored sediment, but showed little response in those habitat units with current. Only in pools and step-pools was there still an increase in Percent Surface Fines upstream of Station 1618 (Figures 4, 9, 14, 19, 24, 29, 34, 39, 44, 49). The comparisons between Area Embeddedness and Percent Surface Fines data were illuminating because both assess surface coverage of the habitat unit with sediment. Percent Surface Fines focuses specifically on substrate particles sized less than 2 mm, while Area Embeddedness does not consider the size of the sediment. We infer from the results of these two assessments that fine sediment has been transported through the surveyed reach except in the most depositional habitat types (pools and step-pools), but sediments larger than 2 mm were still found in all the habitat types within the reach upstream of Station 1618.

Depth of embeddedness or the depth at which dominant substrate is buried could be classified into three groups. Cascades had the lowest embeddedness rating (0.62). Low gradient riffles, high gradient riffles, and pocket-pools had mean ratings around 1.0, and step-pocket-pools, step-runs, and pools had ratings around 1.3 or more (Table 9). This suggests that cascades pass sediment more quickly, and step-habitats and pools have higher embeddedness depths than other non-stepped habitats (Table 9). Depth of embeddedness ratings in pools and step-pools showed a pattern of lower embeddedness depth downstream of station 1618, higher embeddedness between station 1618 and the confluence with NF Mark West Creek, and lower embeddedness depth upstream of that tributary. The other habitat types were either insensitive, were too few in number, and/or not represented in one or more of the zones (Figures 5, 10, 15, 20, 25, 30, 35, 40, 45, 50).

Sediment transport through the creek depends upon the physical nature of the habitat type. The sand and smaller sediment travels quickly through low and high gradient riffles and cascades. These habitat types were relatively free of sediment, even when habitats upstream and downstream of them were clogged with fine sediment. Step-pools and step-pocket-pools were severely affected by sediment deposition. These habitat types are located within steep sections of the stream. However, elevation is lost vertically at the steps of the habitats; there are slow velocity flat-water areas between the steps. The low stream velocity and the normal shallows depths of these small pools allow for sediment disposition. We suspect that all of these habitats within the influence of the 10,000 cubic yard sediment plume are scoured out as flows increase with each storm. Their volumes are small and fill back in immediately when flow recedes after each storm,

since there is such a large amount of sediment available. Some very deep pools in Mark West Creek have been almost completely filled with sediment. Several pools that are now 2 ½ feet deep were about eight feet deep prior to the effects of the 10,000 cubic yard spill. Given sediment of the same size, we think these pools will require higher flows to scour the accumulated sediment. They are both deeper and longer than step- pools or step-pocket-pools. This means that they will take longer to recover from the sediment spill because higher flows occur less frequently. The relationship of rate of scour to rate of re-deposition, the pool's storage capacity, the current level of sediment storage, and the sediment sizes stored and future hydraulic conditions will determine when the lasting effects of sedimentation are finally removed.

There was also a debris dam failure during the rain season of 2005-2006. This sediment release was different than the 10,000 cubic yard sediment plume. The materials that were released had been stored in a debris dam which was the result of unauthorized land disturbing activities on the Minton property in 2004. Sediment consisted of larger cobble and boulder clasts instead of gravel and sand. Perhaps there were smaller sediments, but they had already been transported downstream. Sand causes much of the habitat degrading effects. The volume of material released from the debris dam failure was only about 500 cubic yards; it is insufficient to account for the volume of sediment-related habitat degradation that was observed during this habitat assessment.

The habitat quality assessment is influenced by level of sedimentation, but also relies upon other factors such as stream depth, stream velocity, and instream cover. Pool, step-pool, step-run, and step-pocket-pool habitats showed a pattern of higher quality downstream of station 1618, depressed habitat quality within the sediment zone, and slightly higher habitat quality upstream of NF Mark West Creek (Figure 6, 11, 21, 27). Low gradient riffle, high gradient riffle, and cascade habitats did not show this pattern (Figures 36, 41, 46). Runs, pocket-pools, and DRY habitat units were under-represented or missing in at least one zone (Figures 16, 26, and 51).

Different habitat types are affected by sediment differently. In habitat types that are normally deep, with slow stream velocity, the degradation of habitat comes from reduced living space. Pools and step-pools in upper Mark West Creek were filled in with sediment. The deeper pools are more resistant to sediment deposition because they still have space to provide habitat. However, even the large pools lost most of their space.

The reduction of substrate roughness adversely affects habitat units with current, such as runs, step-runs, pocket-pools, and step-pocket-pools. Low energy expenditure zones become smaller as sedimentation occurs. "Costs" of holding a feeding station become higher and food availability becomes less. Consequently, steelhead that inhabit heavily sedimented streams such as upper Mark West Creak, can be expected to experience reduced growth and higher stress. The results of higher stress would be greater susceptibility to disease and parasites (Waters 1995).

The DRY habitat units are the ultimate expression of sediment overload in the stream. The highest elevation of one of them was approximately twelve inches above the water.

All four DRY units were complete migration barriers because the substrate was gradually sloped so that even the shortest DRY unit (3 feet) represented at least a nine foot long barrier. This precluded not only fish movement, but also interrupted energy flow in the stream. Detritus drives stream energetics and the DRY units stop detritus. This reduces food sources for aquatic invertebrates downstream.

Could there be another source of sediment other than the massive sediment spill from the Cornell property?

- The Minton property released large gravel and cobbles into the stream in 2004 during the process of repairing their driveway. These materials settled as a debris jam that failed the following year. We estimated the amount stored to be about 500 cubic yards. This amount was too small relative to the affected area, and the stored material was too large to cause much biological damage, except as a fish passage impediment.

- Bank components data for the surveyed reach showed that bedrock (Tables 17, 24, 31, 38, 45, 52, 59, 66, 73, 80) was the major bank feature. The dominance of bedrock and boulder meant that the banks were stable and sediment contribution from the banks was low.

- The stream has very steep banks (Tables 19, 26, 33, 40, 47, 54, 61, 68, 75, 82), which is typically associated with bank instability and high sediment loading. In this case, however, the banks are armored with bedrock so they are very stable (Tables 16, 23, 30, 37, 44, 51, 58, 65, 72, 79) and contribute little sediment to the stream.

- We found no evidence of significant inputs of sediment from unstable banks of Mark West Creek or from other tributaries other than that from NF Mark West Creek, the tributary that delivered both the 500 cubic yards of cobble from the Pride Mountain Vineyard and Winery property and the 10,000 cubic yard sediment release from the Cornell property.

- For a portion of the inventory, Tar Water Road and St. Helena Road parallel both sides of the surveyed reach, as well as residences. Roads are notorious sediment sources and these may contribute to sedimentation of the stream, but we found no road source that would account for the volume of sediment that filled in the habitats we saw on this survey.

- Because we could not identify another source of fine sediment with sufficient volume to account the volume of sediment in the stream, we believe that the majority of the observed sediment was from the Cornell property; this material caused virtually all the adverse sedimentation effects noted in this survey.

The adverse biological effects of sedimentation are better understood. There are two phases of adverse biological effects from a sediment spill. The first phase is adverse

effects from suspended sediment. This phase is typically short. All streams clear up after storms. Based on work on NF Mud Springs Creek and Mud Springs Creek in Mendocino County (Cluer and Li 2005) and after examining the photographs of the Cornell sediment spill, Li believes that the initial turbidity concentration caused by the 10,000 cubic yard sediment release was sufficiently high to cause direct mortality to steelhead trout, even with relatively short exposures (Newcombe and Jensen 1996). Lesser concentrations of sediment can interfere with respiration through gill abrasion. Increased turbidity reduces feeding success.

The second phase considers the adverse effects after the sediment has become bedload, which can increase susceptibility to parasites, disease and predation through increased stress (Waters 1995). Until the 10,000 cubic yard sediment plume is transported out of Mark West Creek, the creek will produce and support fewer fish. Additional sediment into Mark West Creek would further delay recovery.

Needham (1938) in his classic book, *Trout Streams*, partitioned streams into two functional parts. Riffles provide habitat where aquatic invertebrate diversity and abundance is greatest and serve as fish food production areas. Pools downstream of riffles receive drifting aquatic invertebrates and the lower stream velocity reduces energetic costs to steelhead. Juvenile steelhead "rear" in pools.

Riffles and cascades were cleared of surface fines, but were clogged sufficiently to close interstitial space with larger sediment. As long as riffles are clogged, aquatic invertebrate abundance will be low. How much more sediment is still upstream to reoccupy these aquatic invertebrate production areas, and when will there be sufficiently high streamflow levels to transport it away?

The step-habitats may provide habitat for aquatic invertebrates, provided the substrate is gravel or cobble and there is sufficient stream current (Wayne C. Fields, Jr., Hydrozoology, personal communication).

All flat-water habitats should be able to support juvenile steelhead. Unfortunately, we observed that those that had current had reduced substrate roughness, and those that had slow velocity had been filled with sediment.

Dr. Li noted a striking decrease in juvenile steelhead. Prior to the 10,000 cubic yard sediment spill, Li had visited areas now occupied by the massive sediment slug. On his previous visits, there was such an abundance of juveniles that tossing food items into the creek created the same results as feeding time at a hatchery. Regrettably, during this habitat survey, there were only occasional encounters with juvenile steelheads.

Steelhead-spawning gravels were extremely rare. Parkinson identified only 450 square feet of steelhead-spawning gravels in approximately 42542 square feet of habitat. Parkinson noticed that the few steelhead redds he observed were located in areas that would minimize scour; he also observed that the placement of redds seemed unusual. He theorized that this placement was probably related to the lack of steelhead spawning

gravels in more usual places. Those places/gravels were buried by the 10,000 cubic yard sediment spill. We suspect that steelhead spawning potential has been reduced because the sediment has buried steelhead spawning gravel, forcing redds to be built with substandard materials. These materials scour more easily; those materials can also smother the developing embryos or entomb the alevins because the interstitial space was so clogged with sediment. This clogging can stop embryonic respiration or prevent emergence out of the gravel.

During the course of the habitat inventory, we located five adult steelhead holding in the larger pools. Three were downstream of station 1618 and two were upstream from two of the DRY habitat units. In addition, we found the skeleton of an adult steelhead that had been eaten by some predator. Both Li and Parkinson believed the number of stranded adults to be unusually high.

The culvert under St. Helena Road on NF Mark West Creek backwatered during the storms of December 2005. This was probably due to sediment reducing the culvert's capacity. If backwatering occurs regularly and the area is inundated for prolonged periods, there is a real threat of saturating the soils and undermining St. Helena Road. In addition, the culvert is not at grade with the stream, so steelhead have to jump into the culvert to gain access upstream.

There are Endangered Species Act issues resulting from the severe sedimentation of upper Mark West Creek. Steelhead trout of the Central California Coast Distinct Population Segment live in Mark West Creek and are listed as *threatened* under the Endangered Species Act (71FR834). Mark West Creek (part of the Russian river watershed), has been designated as critical habitat (70FR52488).

Local residents of the upper Mark West Creek have not seen any coho salmon, an endangered species that once inhabited the creek. Therefore, we conclude that if coho salmon still inhabit Mark West Creek, it is in the lower portions of the stream. They have not yet been directly affected by this sediment spill, since the bulk of the sediment has not yet reached them.

We have concluded that steelhead were killed by the effects of the sediment spills. The habitat upon which they depend has been seriously degraded, which will result in fewer steelhead. This reduced production of steelhead will continue until the excess sediment has been transported out of Mark West Creek.

One of the purposes of the Endangered Species Act is the preservation of ecosystems. The National Marine Fisheries Service must use its authorities not only to conserve species, but also the ecosystems upon which they depend. In this case, the Section 7 process is inappropriate because there are no federal agencies related to these spills; there is no federal nexus. Likewise Section 10 is inappropriate because there was no scientific purpose for releasing these anthropogenic sediments. We are left with Section 9 actions against prohibited acts. (Section 9 makes it unlawful to "take" a listed animal and includes prohibitions against significantly adversely modifying its habitat.)

The endangered species act prohibits the destruction or adverse modification of critical habitat. What qualifies as adverse modification?

We have documented the extent of habitat degradation in upper Mark West Creek due to anthropogenic sedimentation. Sedimentation is a serious problem in streams, and the mechanisms of adverse affects are now known. Waters (1995), in his monograph *Sediment in Streams* wrote, "After a half-century of the most rigorous research, it is now apparent that fine sediment, originating from a broad array of human activities (including mining), overwhelmingly constitutes one of the major environmental factors – perhaps the principal factor – in the degradation of stream fisheries." While our data are qualitative, they are sufficient to predict the adverse effects related of sediment on steelhead and steelhead critical habitat. The degradation of upper Mark West Creek is a clear and excellent example of adverse modification of critical habitat.

The threat of severe sedimentation to Mark West Creek is not over. The Cornell property has more stored sediments; there are inadequate provisions to isolate them from the stream. There remains the imminent threat of another sediment spill, which will further delay the creek from returning to normal functioning as steelhead habitat.

Recommendations:

1) Identify any sediment deposits upstream that threaten Mark West Creek.
   - Halt sediment inputs
   - Identify potential sources of sediment
   - Establish monitoring areas for an ESA Section 9 investigation

2) Find the upstream boundary of sediment slug.
   - Estimate how long the sediment will remain in this reach

3) Describe sediment size composition in the important habitats.
   - Class/size of substrate and amount

4) Continue to measure maximum depth of the pools and the pool's hydraulic control to monitor rate of change in sediment supply. Monitoring of fine sediment will require more intensive sampling than what was performed for this assessment. Bunte and Apt (2001) describe protocols for a quantitative sedimentation (V*) investigation.

5) Develop site specific hydrology by establishing a "gaging" station to monitor streamflow.

6) Longitudinal and seasonal hydrographs should be performed to establish when the stream is gaining or losing streamflow and by how much.

7) Conduct spawning surveys.
   - Locations
   - Substrate composition

8) Determine gravel permeability
   - Redd Piezometers
   - Standpipes
   - Sieve analysis

9) Terrestrial drift analysis to determine amount of fish food from terrestrial sources.

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EXHIBIT 7

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October 23, 2009

NOWWE
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Subject: **Geologic Review of RGH Geologic Report In Response to BZA Comments, Cornell Wine Factory, 245 Wappo Road, Sonoma County.**

I. INTRODUCTION

In accordance with your request, I have reviewed the supplemental geologic report (Reference 3) prepared in support of the proposed wine factory at 245 Wappo Road, in Sonoma County, California. The purpose of the geologic review was to determine whether geologic issues presented to the the Board of Zoning Adjustments during a public meeting in November 2008 have been adequately investigated. The geologic issues consist of an engineering geologic report by Raymond Waldbaum dated November 11, 2008 and questions from the Commissioners themselves.

Proper geologic evaluation of this proposed project requires that the project proponents and County officials conform to ethical and technical standards established by the California Board for Geologists and Geophysicists, California Mining and Geology Board and California Geological Survey (Formerly called California Division of Mines and Geology).

From the beginning, these standards have not been met. The County Planner initially in charge of the project, Sigrid Swedenborg, fraudulently misrepresented the site in a Mitigated Negative Declaration as being in an area where landslide hazards are not present. This was done by Swedenborg in spite of landslide maps prepared for Sonoma County Planning by the California Division of Mines and Geology showing abundant landslides in the site vicinity. As a result, Swedenborg was informed in writing by the California Board for Geologists and Geophysicists on July 25, 2005 that her actions constituted unlicensed practice of geology and the board admonished her to cease this unlicensed practice of geology.

Subsequently, RGH Consultants, Inc. performed substandard work on this site and received a warning letter from the California Board for Geologists and Geophysicists dated September 15, 2005.

Most recently, the geotechnical consulting firm Kleinfelder has become involved as a peer review consultant acting in behalf of Sonoma County PRMD. Please refer to the review of this project by James Robinson (Reference 5), Registered Professional Engineer, Registered Professional Geologist and Certified Engineering Geologist for a specific description of the conflict of interest issue raised by a geologic and geotechnical consulting firm performing investigations and reviews in the same jurisdictional area.

II. UNANSWERED GEOLOGIC ISSUES

In November 2008, I attended a public BZA meeting regarding this project where my written review of the inadequacies of the RGH and Kleinfelder work were presented in my report dated November 11, 2008 (Reference 2). My November 11, 2008 report is specifically acknowledged in the most recent Mitigated Negative Declaration prepared by PRMD. Therefore this report is part of the public review process and must be considered by BZA, subordinate County employees and others. This means that the content of the November 11, 2009 report cannot be ignored and information in that report must be considered and responded to by the project proponents, their technical consultants and the peer review consultants.

The recent supplemental report by RGH and the peer review of that report by Kleinfelder not only fail to address any of the questions raised in Reference 2, the RGH and Kleinfelder documents don't even acknowledge Reference 2. This obvious attempt to subvert the public hearing process by stonewalling the geologic issues must not be allowed by BZA to work. If in the professional opinion of RGH, the questions raised in Reference 2 are valid, they must be answered. If in the professional opinion of RGH, the questions raised in Reference 2 are irrelevant, the reason(s) for that professional opinion must be stated.

Local versus statewide geologic standards of practice

The underlying concern in my prior review report dated November 11, 2008 is that geologic issues in this project are not being addressed in conformance with requirements of the Geologist Registration Act of 1968 because there is a failure to adhere to statewide standards of practice. The validity of this concern is affirmed by RGH themselves on page 5 of Reference 3. There, RGH states "Such reports are considered appropriate within the **local** (emphasis added) industry and are required by PRMD for design and construction of structures in the County". In other words, RGH apparently believes that "Local" standards of practice take precedence over the

statewide standards of practice required of all geologists in California under the Geologist Registration Act of 1968.

I know of nothing to support what RGH has said on page 5 of Reference 3 about whether "Local" or statewide standards of practice govern. In this regard, a very recent enforcement action by the Board for Geologists and Geophysicists has made it crystal clear that statewide standards of practice do apply in Sonoma County, just as they do throughout the State of California. Contrary to what is stated on page 5 of Reference 3, PRMD does not have any authority in setting lower standards of practice in geology. In fact in a letter dated April 6, 2009 to a resident of Healdsburg, the California State Geologist, John G. Parrish, Ph.D., PG states "Under California law, it is the responsibility of the local lead agency to enforce state laws and building codes". The law Dr. Parrish refers to include the Geologist Registration Act of 1968 and the Seismic Hazards Mapping Act of 1990.

Stability analysis

The RGH report dated September 21, 2009 (Reference 3) claims to present stability analyses demonstrating adequate factors of safety for the wine factory site and the septic drainfield. Statewide engineering geology and geotechnical engineering standards of practice require that the stability analysis be based on a thorough and complete geologic investigation and interpretation of the lithology and geologic structure in the slopes being analyzed, including offsite portions of the descending slopes. This is clearly stated in *California Division of Mines and Geology Note 44:* "Each report must be a product of independent geologic mapping of the subject area at an appropriate scale and in sufficient detail to yield a maximum return of pertinent data. In connection with this objective, **it may be necessary for the geologist to extend his mapping into adjacent areas** (emphasis added)". In other words, if offsite geologic conditions affect site stability the offsite area must also be investigated.

It appears that geologic conditions in the descending natural slope below the wine factory site are still unknown. A buttress above this offsite descending natural slope would only have a beneficial effect if the descending slope itself is stable, something that has not been demonstrated. A more detailed description of the importance of the downslope geologic conditions and an evaluation of the stability analysis performed by RGH are presented in Reference 5 by James Robinson , Registered Professional Engineer, Registered Professional Geologist and Certified Engineering Geologist.

Grading plan

Subsequent to the November 2008 BZA public meeting, Atterbury and Associates has prepared a grading plan for the project. A significant part of the proposed grading is construction of an approximately 60 foot high side-hill fill slope on a westerly descending natural slope. This natural slope appears on aerial photographs and

regional geologic maps to be in an area of landslides. Even if no landslides are present, construction of this fill slope at this location may add surcharging weight to the slope, increasing the driving forces that tend to cause slope failure. This apparent potential hazard is not only not evaluated in the RGH report dated September 21, 2009 (Reference 3), it is not even mentioned.

One of the lessons of the 1994 Northridge earthquake in Los Angeles County is that side hill fills fail under seismic loading, even under the most favorable geologic and as-graded conditions. This problem is described in detail in the November 2001 issue of the *Journal of Geotechnical and Geoenvironmental Engineering*. Therefore, it may be very imprudent to design a side hill fill for this site.

If this fill slope is not feasible because of the inherent instability of side hill fills and/or the slope upon which it is to be placed may be presently unstable or may be destabilized by the fill mass, the fill is not feasible and the project is not feasible as designed.

Relocated leachfield

According to page 6 of the RGH report dated September 21, 2009 (Reference 3), the proposed leachfield has been relocated to 560 Wappo Road. Topographic features indicative of landsliding are apparent on Plates 1 and 9 in Reference 1 and on Plate 10 a landslide is shown in the westerly descending slope west of the leachfield. RGH attributes this landslide to "...grading for an old roadway". However, Plate 9 shows that the landslide is outside of the area graded for the road, so this is not shown by RGH as a failure within road fill or within a cut slope associated with the road grading. Therefore, this landslide may be a failure within weak natural soils and/or weak landslide debris and/or weak bedrock that exists in the leachfield area. In that case, adding water from a leachfield may have a critical destabilizing effect.

I trust that the forgoing information fulfills your present requirements. The opportunity to be of professional service is sincerely appreciated. If you have any questions, please do not hesitate to call.

Very truly yours,

Raymond Waldbaum
Professional Geologist 3142
Certified Engineering Geologist 923

REFERENCES

1. *Preliminary Geologic Study, Cornell Winery, 245 Wappo Road, Sonoma County, California, APN 028-260-041,* dated May 31, 2006 (Updated April 22, 2009), by RGH Consultants, Inc.

2. *Geologic Review of Updated RGH Geologic Report In Support of Cornell Wine Factory, 245 Wappo Road, Sonoma County, California, APN 028-260-041,* dated November 11, 2008, by Raymond Waldbaum.

3. *Response To BZA Comments, Cornell Winery, 245 Wappo Road, Santa Rosa, California* dated September 21, 2009, by RGH Consultants, Inc.

4. *Review of Response to BZA Comments (12-15-08) by RGH Consultants, Inc. (9-21-09) Cornell Winery, 245 Wappo Road, Sonoma County, California* dated October 1, 2009, by Kleinfelder.

5. *Review of Report For Cornell Winery, 245 Wappo Road, Santa Rosa, CA 95404* dated October 23, 2009, by JR2 Consulting, Inc.

EXHIBIT 8

JR² Consulting, Inc.
Environmental • Engineering • Geology

NOWWE
7168 St. Helena Road
Santa Rosa, CA 95404

Subject: Review of Reports For
Cornell Winery
245 Wappo Road
Santa Rosa, CA 95404

References:
RGH Consultants, Inc. Letter (9-21-09)
RGH Consultants, Inc. Report (3-31-06)
Kleinfelder Letter (10-1-09)
Raymond Waldbaum Letters (11-11-08 and 10-23-09)
BZA Comments Email (12-15-08)
Atterbury and Associates, Inc. (09-14-09)
CRWQCB Letter (11-25-08)

Dear NOWWE:

INTRODUCTION

Per your request, I have reviewed the above referenced documents related to Cornell Winery on 245 Wappo Road in Santa Rosa, California. The purpose of this review is to evaluate the potential environmental effects of the proposed Cornell Winery project, located in Sonoma County.

CEQA PROCESS BACKGROUND

The Initial Study is a public document used by the decision-making lead agency to determine whether a project may have any significant effects on the environment. In the case of the proposed project, Sonoma County, acting as lead agency, will use the Initial Study to determine whether the project has a significant effect on the environment. This Assessment must be supported by an environmental analysis provided in the initial study document.

PROFESSIONAL REVIEW

I have reviewed reports on Geology and Soils.

Geology and Soils

The preliminary Geologic Report and Response to BZA Comments produced several test pits, core borings and bucket auger borings which have been logged and samples tested from the site. Based on this data, two slope stability calculations were produced one for the proposed winery site and one for the proposed leachfield site. Due to the "preliminary" status of the report, the laboratory data and slope stability data was not provided for review, and therefore a detail review of the analysis could not be conducted. (As part of the Initial Study process data must be available to the public as part of the public participation).

Klienfelder has been retained by the county to review the project consultant's reports. Please be aware that the California Geological Survey Note 41, *Guidelines for Reviewing Geological Reports* states under the Conflict of Interest Section that "A different type of conflict commonly exists in a jurisdiction where the geologic review is performed by a consulting geologist who also is practicing commercially (performing geologic investigations) within the same jurisdictional area. Such situations should be avoided, if at all possible.". In addition, American Society of Civil Engineers (ASCE) in Resolution 502, *Professional Ethics and Conflict of Interest*, States "Even the appearance of a conflict of interest is to be avoided". Klienfelder should not review reports for the county as Klienfelder is a practicing consultant in the same county.

- However, based on the Klienfelder review of the slope stability data, the slope stability analysis may have been modeled inaccurately. Based on comments by Klienfelder the buttressed fill slope may have to be created larger and wider. The size of the buttressed fill slope, the location, size and elevation of the keyway, have not been determined, the design has not been reviewed for constructability and it has not been reviewed for its possible effects on the environment (i.e. Aesthetics, deforestation, increased absorption of the soils, increased runoff). The buttressed fill has not been properly demonstrated as feasible, and as such the project can not be professionally determined as feasible. The report is incomplete and the county can not rely on an incomplete report.

- There are several geological and soils issues identified on the property based on the "preliminary" geotechnical report, however, no offsite geological and soils exploration and testing has been conducted, this is very important in a landslide prone area as the offsite area is located at the base of the hillside. Without an offsite investigation any land disturbing activities upslope may reactivate the unstable mass and cause a reactivation of the whole landslide. Due to these unresolved issues, the current preliminary geotechnical investigation does not remove the significant impact potential from the landslides to the project feasibility. Therefore, this project has not demonstrated its construction feasibility related to soil issues.

- A slope stability analysis requires a surveyed topographic map covering the entire cross-section. Based on the maps provided (Plate 7 and 9) the topography ends at the property line. No additional maps, surveys were provided to complete the base of the cross-section and the stability calculation. The base of the hill is an extremely important component of the stability analysis and without accurate data the whole calculation could be grossly inaccurate. It appears the base of the slope was estimated along with the depth and thickness of the landslide debris. This area is known for landslides (there are two onsite), inaccurate calculations of slope stability analysis are unacceptable. A full geotechnical analysis of the slope along with test pits and topographic surveys to the base of the slope are required.

- Based on the CB-7 at the upper center of the labeled landslide, the thickness is about 21.5 feet thick, no other testpits or cored boring found a total depth of the landslide. No description of the landslide contact was provided in the log, just that the contact was about 21.5 ft deep; it also appears that the contact was not sampled. In addition, water was reported in one of the test holes. There is a complete lack of information on the depth of the landslide downslope of CB-7 and if water may be perched within the landslide debris or at the landslide contact. The slope stability analysis is inadequate in scope and detail do to data being also lacking of additional detail. You can not calculate slope stability based on one borehole.

- Page 5 of the RGH Report dated Sept. 21, 2009 under the heading Conclusions, states that "the landslide can be remediated by excavating the debris to its full depth and rebuilding the slope…" and "that a level keyway will be excavated into bedrock at the toe of the repair". However, based on Plate 7, the base of the landslide is offsite. If the keyway is to be placed at the edge of property and not at the toe of the landslide debris, there is a possibility of the debris below the repair to reactivate. What is the slope stability of the hillside with the repair and the debris below the repair in the river bottom? What is the stability of the hillside during the repair? Repairs of landslides are a hazard and due to near vertical cuts and heavy vibrating equipment can introduce a high level of instability of the slope. The temporary cut should also be calculated in the slope stability program to identify the safety levels to the contractors.

- A Geotechnical Report where Preliminary or Final, requires the supporting data be included and provided, especially if the report is signed and stamped by a licensed Engineer and licensed Geologist. This slope stability analysis is required to include the calculations, the borehole logs, the cross-sections, the topographic map, the laboratory data, the proposed repair, the calculations and design drawings proving the repair is feasible. This was not provided in this signed and stamped "Response". A Complete Preliminary Report with slope stability analysis and supporting data should be submitted to the Board of Zoning Adjustment and made available to the public prior to being able to making a ruling on whether the project is feasible at this location as proposed.

With two landslides onsite, and the fact the neither of the slides have been adequately explored and slopes stability addressed, this project is not demonstrated its feasibility as proposed.

A significant negative effect from the project may occur based on the preliminary proposed designs. If you have any questions on the plan, please contact me at your convenience at 209-642-5445. It has been a pleasure to be of service.

Sincerely,

JR Squared Consulting, Inc.

James Robinson
P.E 69045, C.E.G. 2441, P.G. 7834

EXHIBIT 9

JR² Consulting, Inc.
Environmental • Engineering • Geology

NOWWE
7168 St. Helena Road
Santa Rosa, CA 95404

Subject: Review of Reports For
Cornell Winery
245 Wappo Road
Santa Rosa, CA 95404

References: Letter from Jim Doerksen (11-13-08)
Letter from Law offices of Geary, Shea…(08-20-09)
Raymond Waldbaum Letters (11-11-08, 10-23-08)
BZA Comments Email (12-15-08)
Atterbury and Associates, Inc. (09-14-09)
CRWQCB Letter (11-25-08)
Sonoma County Groundwater Checklist (Dec. 2003)
Kleinfelder approval letter (3-5-08)

Dear NOWWE:

INTRODUCTION

The purpose of this review is to evaluate the potential environmental effects of the proposed Cornell Winery project, located in Sonoma County. I have reviewed reports on hydrology and water quality and quantity including the above referenced documents related to the proposed Cornell Winery on 245 Wappo Road in Santa Rosa, California. Most important among these reports are the Sonoma County Groundwater Studies Checklist and the Kleinfelder approval of the Todd Engineers groundwater availability investigations.

My qualifications to perform this review are my professional registration in the State of California as a Professional Engineer, Professional Geologist and Certified Engineering Geologist. I have provided professional "environmental" and geotechnical services for the last 12 years to a wide range of clients, including school districts, cities, developers, wineries, and agricultural producers and processors. The services have included groundwater studies, contamination investigations and cleanups, producing CEQA initial studies, including water and geologic (geotechnical) detailed site studies and numerous environmental reviews and hillside geotechnical investigations.

CEQA PROCESS BACKGROUND

The Initial Study is a public document used by the decision-making lead agency to determine whether a project may have any significant effects on the environment. In the case of the proposed project, Sonoma County, acting as lead agency, will use the Initial Study to determine whether the project has a significant effect on the environment. This Assessment must be supported by an environmental analysis provided in the initial study document.

WATER AVAILABILITY

For projects in Sonoma County Class IV "Water Scarce" areas, a very specific water availability investigative procedure must be followed. This requirement is specified in Sonoma County General Plan Policy WR-2e and the Sonoma County Groundwater Studies Checklist that lists 31 specific items that must be addressed. No exemptions exist to these requirements.

Wineries typically produce a large amount of their overall water usage in a short amount of time (i.e. August to October) during the crush. No study has been completed on whether this site can produce enough groundwater during the late summer months (when groundwater availability is low) for its critical grape crush and bottling use (high water use) time of year.

The County requirements specify that the water availability investigation report must be "… prepared by a registered Geologist, Certified Engineering Geologist or Certified Hydrogeologist". In this case, the geotechnical consulting firm, Kleinfelder, has been retained by the County to review the work of the developer's consultant, Todd Engineers. In its role as reviewer on behalf of the County, Kleinfelder's task is to determine whether County requirements have been met. For this site, the County's requirements are set forth in Sonoma County General Plan Policy WR-2e and the Sonoma County Groundwater Studies Checklist.

The Kleinfelder review report dated March 5, 2008 appears to present contradictory statements. Kleinfelder states, "Copies of … the PRMD letters were not provided for review" however later in its report states, "Kleinfelder reviewed the provided documents and compared the provided information to the County Checklist with a focus on information in the PRMD letters". Were the PRMD letters provided, were they reviewed, and were they provided to the public for review or not?

With regard to adherence to the Sonoma County Groundwater Studies Checklist requirements, Kleinfelder states that it is unnecessary to conform with the Checklist requirements because "…we agree that anecdotal interviews with well owners and drillers are not necessary for this study". This is a completely inappropriate position for a reviewer to take for two reasons. First, anybody with a familiarity with the complexity of determining water availability in geologically complex, water scarce areas knows that one of the most important issues to research is the status of existing wells. In this area, wells have failed and been overdrafted. It has been documented that water has had to be trucked into the neighboring Pride Winery. Second, and even more important, is the fact that peer review must be an objective and

even handed process and the reviewer's task is to confirm conformance to published standards, not to decide which standards they think are important or not and which must be complied with or not. This lack of even handedness is a fatal flaw in the Kleinfelder review.

Kleinfelder has also failed to acknowledge and utilize information in a Department of Water Resources memorandum dated June 6, 2005. This memorandum, prepared by Christopher L. Bonds, P.G., C.H.G., states "…the analysis of groundwater conditions in fractured bedrock aquifers requires long-term pump test data that can be used to identify aquifer boundary conditions". Bonds is correct in this assertion, and until thorough testing as outlined by Bonds has been accomplished, the water availability of the site is simply unknown. Mr. Bonds has not retracted his statement. Mr. Bonds needs to be apprised of all the information relative to this project including the information available on the property that is subject of a proposal to relinquishment of riparian rights (see below).

PROPOSAL TO RELINQUISH RIPARIAN RIGHTS

In exchange for requiring and the refusal of the applicant to perform a sustained aquifer pump down test in late summer with monitoring wells and recharge measurements clearly called out for by the conditions that exist in the upper watershed and by the County requirements, the applicant has proposed to relinquish a riparian right along Mark West Creek at 100 Wappo Road (old Farhat property).

Water usage is more complex then a simplistic numbers calculation, especially in an impacted watershed. In fact, based on the June 18, 2008 letter from the previous owner of 100 Wappo Road, in recent years no water is available from the creek at certain times of the year including late summer, and a well had to be drilled. In other words, the project is proposing a water right swap; however, the water right they are willing to relinquish does not produce water. Therefore the proposed water swap based on available water shows that there is no water available to swap and any proposed water swap will have the effect of impacting the current available water in the project area.

Based on the lack of available site water data, the proposed well should have a constant-rate aquifer test with observation in the surrounding wells and creek. The test should be conducted in the late summer during the highest water usage by the proposed winery which is also the typical time when the least water is available due to the lack of rainfall. The creek is recognized as an impacted watershed and the surrounding wineries already have a need to import water. Additional testing of the "aquifer" beneath the project location is required prior to providing mitigation. The "aquifer" beneath the winery may have a direct conduit to the Mark West Creek where as the proposed mitigation may be water from another source. The proposed mitigation (water swap) is based on old, inaccurate data and will in my opinion have a significant effect on the water quantity and quality beneath and down stream of the project.

This project has not demonstrated its feasibility in fact the proposed mitigation (water

swap) will increase the water consumption of the area and the project as proposed will have a significant negative effect in regards to water quality and water usage. The project also has not demonstrated to be consistent with the general plan, in particular policy WR-2e, as such the project is not feasible.

DEPARTMENT OF WATER RESOURCES

When the idea of mitigating the extra water use of this latest winery and vineyard project was recently presented to the Department of Water Resources, important information was apparently withheld.

For example, the fact that due to the loss of his riparian water source during certain time of the year beginning in the late 1990's, the previous owner of 100 Wappo Road, Mr. Farhat, was forced to pay to have a well drilled on his property. In addition, the 100 Wappo Road property also contains a spring and a pond which were not disclosed. The applicant has made no promise to relinquish rights to these waters. The County's failure to analyze the actual conditions of the Farhat property, made known to it at least as early as 2008 by Mr. Farhat himself and others, and not providing this critical information to the California State Department of Water Resources has been at a minimum a disservice to the public process.

The missing information, when considered as it must, completely undermines the proposed relinquishment as a net gain to the creek. The ability of the applicant to take all the other water on that site, denying both sheet flow and sub surface flows needed to maintain a base flow, is unlimited. The project proposes to add impacts to the already over impacted resources of the area. The project has not been subjected to the investigations necessary to provide for good planning and to avoid impacts to long-time residents and wildlife in this water scarce area. Every indication suggests that the project will contribute to the water problems that already exist. Those water related problems have not, to date, been properly identified, evaluated, or mitigated.

In summary, the water availability reports by Todd and the Kelinfelder review of those reports have not fully addressed the water availability for this project and the surrounding project area. Based on the procedure for implementing WR-2e, if the cumulative impacts are not adequately addressed, then the project is not consistent with the general plan, and the project must be denied based on it not being consistent with the general plan.

And finally, it appears that Kleinfelder is a local firm and has therefore been inappropriately retained by the County to review this local project. Professional standards state that, if at all possible, reviewers should not perform reviews in the area in which they practice in order to avoid conflict of interest. No basis has been provided that guarantees that such conflict has been avoided and that it was not possible to retain an unconflicted reviewer.

FAILURE TO CONFORM TO COUNTY REQUIREMENTS

I have reviewed the Groundwater Checklist for Sonoma County and General Plan Policy WR-2e (formerly RC-3h). The Checklist includes a list of requirements of a groundwater study and what is needed in the study. Based on my review of the available project documents several items have not been complied with. Item 11. Local property owners where not contacted. Item 13, 14, 15, 16, and 17, a study of groundwater availability and storage capacities have not been conducted for the project site. A pumping test should be preformed to provide additional data to answer these questions.

Kleinfelder stated in their March 5, 2008 Letter that items 9 through 12 have not been addressed. And that interviews with the well drillers and local well owners is not necessary.

The Policy WR-2e requires proof of adequate groundwater in the project area. It is well documented by statements from the local neighbors that the nearby winery and the subject site have had to import water during the summer months. Therefore, a detailed study to prove that groundwater supplies are adequate and will not add to a cumulative impact to the groundwater is necessary and required by this county policy (page 217, Sonoma County General Plan). The project should be determined not feasible based on the current information.

The policy requires that the project have an adequate on-site groundwater supply. This project does not meet that requirement based on the need for trucking of water in the summer months. The policy also states that the current and future usage of groundwater supplies in the area will not be affected by the project. This requirement also has not been met; the nearby West Mark Creek has experienced a loss of water and therefore impacts to the area are currently occurring.

This policy requires that evidence to meet the requirements must be presented **prior** to its discretionary decisions. A groundwater study for the project which must include test wells is **required** based on Sonoma County Code sections 7-12 and 25-179 for Zone IV water scarce areas. Based on the reduced available water in the Mark West Creek, and the need for importation of water to a nearby winery during the summer months, test wells for the project are necessary in order to demonstrate that the project will not impact the water availability of the area.

The Water Reports available have not fully addressed the water availability for this project and the surrounding project area. Based on the procedure for implementing WR-2e, if the cumulative impacts are not adequately addressed, then the project is not consistent with the general plan.

The project must be denied based on it not being consistent with the general plan.

WASTEWATER ISSUES

The Atterburty and Associates, Inc. Letter compares the water consumption of the winery versus the residences. The amount of water pumped for the project is one issue that should be addressed, however, the water quality is an important issue as well. Pollution from winery waste is a significant problem, and it is not uncommon to find such pollutants eventually making their way into watercourses. This must be avoided, especially in the project area. The water produced by this process contains high levels of chemicals and are listed below (Collected from the Regional Water Quality Control Board). Constituent concentrations are the highest during the crush season, and are typically in the following ranges:

Compound	Units	Crush Season Concentration Range (min-max)	Non-Crush Season Concentration Range (min-max)
pH	pH units	2.5 – 9.5	3.5 - 11
Dissolved Oxygen	mg/L	0.5 – 8.5	1 - 10
BOD	mg/L	500 – 12,000	300 – 3,500
COD	mg/L	800 – 15,000	500 – 6,000
Grease	mg/L	5 – 30	5 - 50
Settleable Solids	mg/L	25 – 100	2 -100
Nonfilterable Residue	mg/L	40 – 800	10 - 400
VSS	mg/L	150 – 700	80 - 350
TDS	mg/L	80 – 1,800	80 – 1,800
Nitrogen	mg/L	1 – 40	1 - 40
Nitrate (as Nitrate)	mg/L	0.5 – 4.8	NR
Phosphorous	mg/L	1 – 10	1 - 40
Sodium	mg/L	35 – 200	35 - 200
Alkalinity ($CaCO_3$)	mg/L	40 – 730	10 - 730
Chloride	mg/L	3 – 250	3 - 250
Sulfate	mg/L	10 - 75	20 - 75

The Atterburty and Associates, Inc letter states that the wastewater will be processed in pretreatment and primary treatment equipment, and will be reduced to levels less then what is required by the North Coast Regional Water Quality Control Board. The equipment, however, and the limits have not been presented. Salts are the number one issue with winery wastewater and a detailed treatment plan and salinity reduction plan are needed to keep the salts out of the waste stream as much as possible. These plans must be presented for a public review. Without these plans, this project cannot be demonstrated as feasible.

In addition, the Regional Water Quality Control Board has issues a letter dated November 25, 2008, stating that "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…" Given this characterization by the state agency staff, I concur, that this watershed is already experiencing adverse significant environmental impacts. This type of development in this impacted location needs to under go a thorough analysis to demonstrate that it will not have a significant negative impact on the environment. This has not been done. In fact these statements by the Regional Board also demonstrate that the project can not meet the requirements of Policy WR-2e. WR-2e requires an adequate on-site groundwater supplies for the proposed use and the current and future groundwater supplies will not be affected by the project and based on the reviewed reports and letters, the area is already in overdraft and this project will cause new and greater impacts. This is in direct conflict to Sonoma County Policy WR-2e.

If you have any questions on the plan, please contact me at your convenience at 209-642-5445. It has been a pleasure to be of service.

Sincerely,

JR Squared Consulting, Inc.

James Robinson
P.E 69045, C.E.G. 2441, P.G. 7834

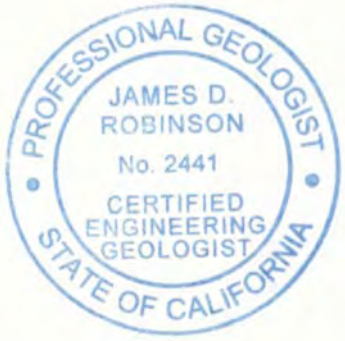

EXHIBIT 9

JR² Consulting, Inc.
Environmental • Engineering • Geology

NOWWE
7168 St. Helena Road
Santa Rosa, CA 95404

Subject: Review of Reports For
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even handed process and the reviewer's task is to confirm conformance to published standards, not to decide which standards they think are important or not and which must be complied with or not. This lack of even handedness is a fatal flaw in the Kleinfelder review.

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Water usage is more complex then a simplistic numbers calculation, especially in an impacted watershed. In fact, based on the June 18, 2008 letter from the previous owner of 100 Wappo Road, in recent years no water is available from the creek at certain times of the year including late summer, and a well had to be drilled. In other words, the project is proposing a water right swap; however, the water right they are willing to relinquish does not produce water. Therefore the proposed water swap based on available water shows that there is no water available to swap and any proposed water swap will have the effect of impacting the current available water in the project area.

Based on the lack of available site water data, the proposed well should have a constant-rate aquifer test with observation in the surrounding wells and creek. The test should be conducted in the late summer during the highest water usage by the proposed winery which is also the typical time when the least water is available due to the lack of rainfall. The creek is recognized as an impacted watershed and the surrounding wineries already have a need to import water. Additional testing of the "aquifer" beneath the project location is required prior to providing mitigation. The "aquifer" beneath the winery may have a direct conduit to the Mark West Creek where as the proposed mitigation may be water from another source. The proposed mitigation (water swap) is based on old, inaccurate data and will in my opinion have a significant effect on the water quantity and quality beneath and down stream of the project.

This project has not demonstrated its feasibility in fact the proposed mitigation (water

swap) will increase the water consumption of the area and the project as proposed will have a significant negative effect in regards to water quality and water usage. The project also has not demonstrated to be consistent with the general plan, in particular policy WR-2e, as such the project is not feasible.

DEPARTMENT OF WATER RESOURCES

When the idea of mitigating the extra water use of this latest winery and vineyard project was recently presented to the Department of Water Resources, important information was apparently withheld.

For example, the fact that due to the loss of his riparian water source during certain time of the year beginning in the late 1990's, the previous owner of 100 Wappo Road, Mr. Farhat, was forced to pay to have a well drilled on his property. In addition, the 100 Wappo Road property also contains a spring and a pond which were not disclosed. The applicant has made no promise to relinquish rights to these waters. The County's failure to analyze the actual conditions of the Farhat property, made known to it at least as early as 2008 by Mr. Farhat himself and others, and not providing this critical information to the California State Department of Water Resources has been at a minimum a disservice to the public process.

The missing information, when considered as it must, completely undermines the proposed relinquishment as a net gain to the creek. The ability of the applicant to take all the other water on that site, denying both sheet flow and sub surface flows needed to maintain a base flow, is unlimited. The project proposes to add impacts to the already over impacted resources of the area. The project has not been subjected to the investigations necessary to provide for good planning and to avoid impacts to long-time residents and wildlife in this water scarce area. Every indication suggests that the project will contribute to the water problems that already exist. Those water related problems have not, to date, been properly identified, evaluated, or mitigated.

In summary, the water availability reports by Todd and the Kelinfelder review of those reports have not fully addressed the water availability for this project and the surrounding project area. Based on the procedure for implementing WR-2e, if the cumulative impacts are not adequately addressed, then the project is not consistent with the general plan, and the project must be denied based on it not being consistent with the general plan.

And finally, it appears that Kleinfelder is a local firm and has therefore been inappropriately retained by the County to review this local project. Professional standards state that, if at all possible, reviewers should not perform reviews in the area in which they practice in order to avoid conflict of interest. No basis has been provided that guarantees that such conflict has been avoided and that it was not possible to retain an unconflicted reviewer.

FAILURE TO CONFORM TO COUNTY REQUIREMENTS

I have reviewed the Groundwater Checklist for Sonoma County and General Plan Policy WR-2e (formerly RC-3h). The Checklist includes a list of requirements of a groundwater study and what is needed in the study. Based on my review of the available project documents several items have not been complied with. Item 11. Local property owners where not contacted. Item 13, 14, 15, 16, and 17, a study of groundwater availability and storage capacities have not been conducted for the project site. A pumping test should be preformed to provide additional data to answer these questions.

Kleinfelder stated in their March 5, 2008 Letter that items 9 through 12 have not been addressed. And that interviews with the well drillers and local well owners is not necessary.

The Policy WR-2e requires proof of adequate groundwater in the project area. It is well documented by statements from the local neighbors that the nearby winery and the subject site have had to import water during the summer months. Therefore, a detailed study to prove that groundwater supplies are adequate and will not add to a cumulative impact to the groundwater is necessary and required by this county policy (page 217, Sonoma County General Plan). The project should be determined not feasible based on the current information.

The policy requires that the project have an adequate on-site groundwater supply. This project does not meet that requirement based on the need for trucking of water in the summer months. The policy also states that the current and future usage of groundwater supplies in the area will not be affected by the project. This requirement also has not been met; the nearby West Mark Creek has experienced a loss of water and therefore impacts to the area are currently occurring.

This policy requires that evidence to meet the requirements must be presented **prior** to its discretionary decisions. A groundwater study for the project which must include test wells is **required** based on Sonoma County Code sections 7-12 and 25-179 for Zone IV water scarce areas. Based on the reduced available water in the Mark West Creek, and the need for importation of water to a nearby winery during the summer months, test wells for the project are necessary in order to demonstrate that the project will not impact the water availability of the area.

The Water Reports available have not fully addressed the water availability for this project and the surrounding project area. Based on the procedure for implementing WR-2e, if the cumulative impacts are not adequately addressed, then the project is not consistent with the general plan.

The project must be denied based on it not being consistent with the general plan.

WASTEWATER ISSUES

The Atterburty and Associates, Inc. Letter compares the water consumption of the winery versus the residences. The amount of water pumped for the project is one issue that should be addressed, however, the water quality is an important issue as well. Pollution from winery waste is a significant problem, and it is not uncommon to find such pollutants eventually making their way into watercourses. This must be avoided, especially in the project area. The water produced by this process contains high levels of chemicals and are listed below (Collected from the Regional Water Quality Control Board). Constituent concentrations are the highest during the crush season, and are typically in the following ranges:

Compound	Units	Crush Season Concentration Range (min-max)	Non-Crush Season Concentration Range (min-max)
pH	pH units	2.5 – 9.5	3.5 - 11
Dissolved Oxygen	mg/L	0.5 – 8.5	1 - 10
BOD	mg/L	500 – 12,000	300 – 3,500
COD	mg/L	800 – 15,000	500 – 6,000
Grease	mg/L	5 – 30	5 - 50
Settleable Solids	mg/L	25 – 100	2 -100
Nonfilterable Residue	mg/L	40 – 800	10 - 400
VSS	mg/L	150 – 700	80 - 350
TDS	mg/L	80 – 1,800	80 – 1,800
Nitrogen	mg/L	1 – 40	1 - 40
Nitrate (as Nitrate)	mg/L	0.5 – 4.8	NR
Phosphorous	mg/L	1 – 10	1 - 40
Sodium	mg/L	35 – 200	35 - 200
Alkalinity ($CaCO_3$)	mg/L	40 – 730	10 - 730
Chloride	mg/L	3 – 250	3 - 250
Sulfate	mg/L	10 - 75	20 - 75

The Atterburty and Associates, Inc letter states that the wastewater will be processed in pretreatment and primary treatment equipment, and will be reduced to levels less then what is required by the North Coast Regional Water Quality Control Board. The equipment, however, and the limits have not been presented. Salts are the number one issue with winery wastewater and a detailed treatment plan and salinity reduction plan are needed to keep the salts out of the waste stream as much as possible. These plans must be presented for a public review. Without these plans, this project cannot be demonstrated as feasible.

In addition, the Regional Water Quality Control Board has issues a letter dated November 25, 2008, stating that "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…" Given this characterization by the state agency staff, I concur, that this watershed is already experiencing adverse significant environmental impacts. This type of development in this impacted location needs to under go a thorough analysis to demonstrate that it will not have a significant negative impact on the environment. This has not been done. In fact these statements by the Regional Board also demonstrate that the project can not meet the requirements of Policy WR-2e. WR-2e requires an adequate on-site groundwater supplies for the proposed use and the current and future groundwater supplies will not be affected by the project and based on the reviewed reports and letters, the area is already in overdraft and this project will cause new and greater impacts. This is in direct conflict to Sonoma County Policy WR-2e.

If you have any questions on the plan, please contact me at your convenience at 209-642-5445. It has been a pleasure to be of service.

Sincerely,

JR Squared Consulting, Inc.

James Robinson
P.E 69045, C.E.G. 2441, P.G. 7834

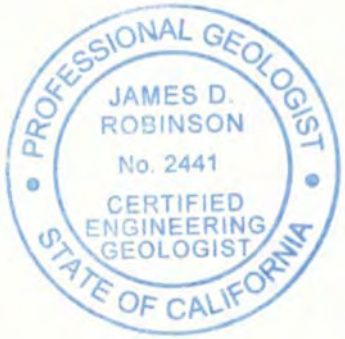


EXHIBIT 10

The Engineering Geologist
Since 1969
RG 3142 CEG 923
7945 St. Helena Road Santa Rosa, CA 95404
Phone 707-539-2577
Fax 707-539-5773

November 4, 2009

NOWWE
7168 St. Helena Road
Santa Rosa, CA 95404

Subject: **Proposed Road Paving**
Cornell Wine Factory,
245 Wappo Road, Sonoma County.

Wherever there is a change in land use and/or proposed grading and road and building construction, prevention of increased erosion is essential in project design. This is accomplished by controlling the way water flows across the ground surface on the site. It is my understanding that a proposed mitigation for increased erosion on the wine factory site and for sediment deposition in adjacent water courses is paving of road surfaces. Control of erosion by adequate drainage design is not, in my experience, considered a "mitigation". On the contrary, it is a minimum standard to be met on any project.

The proposed project is located in a very rural, mountainous area where driveways and private roads are generally constructed by cut and fill grading. The road surfaces created by this grading are typically sloped slightly towards the upslope side of the road (inward) where a rock-lined ditch is constructed along the road to collect water that drains off the road. Water that collects in these ditches is typically discharged through culverts that pass under the roads and is discharged onto the adjacent descending slopes. The culverts are constructed at relatively frequent intervals to prevent individual culverts from discharging large quantities of water that would cause excessive erosion. The road surfaces are covered with a layer of gravel that is typically about six inches thick. Where these unpaved roads and drainage devices are properly constructed and maintained, they provide good vehicle access and minimal erosion. Where these unpaved roads are poorly maintained and/or do not have adequate drainage structures the opposite is true.

When pavement is placed on a road, an impermeable surface is created. This prevents erosion of the road surface. Rainwater that falls on the road cannot infiltrate into the ground and it all runs off. If this increased (due to reduction of infiltration) runoff is properly controlled, pavement can be beneficial in reducing erosion and sediment deposition in adjacent watercourses. Where the drainage of water off paved roads is not properly controlled, the greater quantity of runoff water can actually

increase overall erosion and deposition of sediment into adjacent watercourses.

When considering the potential for increased erosion and deposition of sediment into adjacent water courses resulting from the proposed project, it is important to keep the actual impact of the proposed minor road construction in proper perspective. The inherent geologic instability of the site, indicated on published regional reference maps, and recent defoliation of large areas of the site are much greater threats to water quality than any difference in the actual surface materials on the very short sections of road to be used on this site. For example, the active landslide below the residence at 245 Wappo Road greatly impacted water quality in the subjacent water course and in Mark West Creek itself. Thus, from the perspective of increased erosion potential and water quality in nearby creeks, a discussion of alternative road surfaces appears to be much more of a "red herring" than a mitigation.

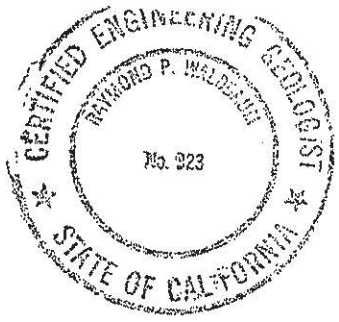
Actual mitigation of erosion hazards and threats to water quality would require a thorough geotechnical investigation of the overall site (including descending natural slopes), avoidance of any grading and building construction in unstable areas or mitigation of the geologic instabilities, re-vegetation of defoliated areas, proper investigation of the landslide below the residence at 245 Wappo and construction of a proper landslide repair, hydrologic and geotechnical evaluation of the culvert and fill mass placed in the drainage course below the residence at 245 Wappo Road, avoidance of effluent disposal in unstable areas and avoidance of any future defoliation and/or improper grading.

I trust that the forgoing information fulfills your present requirements. The opportunity to be of professional service is sincerely appreciated. If you have any questions, please do not hesitate to call.

Very truly yours,

Raymond Waldbaum

Raymond Waldbaum
Professional Geologist 3142
Certified Engineering Geologist 923



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10.453.01

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November 11, 2009

VIA FACSIMILE, EMAIL AND FEDERAL EXPRESS

Honorable Paul Kelley, Chairman
Mike Kerns, Member
Valerie Brown, Member
Shirlee Zane, Member
Efren Carrillo, Member
Sonoma County Board of Supervisors
575 Administration Drive, Room 100A
Santa Rosa, CA 95403

Board of Zoning Adjustments
c/o Permit Resource Management Department
County of Sonoma
2550 Ventura Avenue
Santa Rosa, CA 95403

Re: Henry Cornell Winery Project, 245 Wappo Road
UPE 07-0008; SCH 2008102040; APN 028-260-041

Response to "Statement on Behalf of Cornell Farms LLC in Support of Use Permit Application 07-0008" dated November 6, 2009

Dear Supervisors and Board of Zoning Adjustments:

NOWWE respectfully submits the following comments in response to the Project applicant's letter dated November 6, 2009. The letter engages in irrelevant *ad hominem* attacks, devolves into palpably mistaken claims, and completely fails to respond to NOWWE's demonstration that an EIR must be prepared.

Regretfully, the Project proponent's letter wastes your Boards' valuable time by repeatedly indulging in personal attacks against NOWWE, its members, and government agencies. For example, it faults unspecified persons for estimating that the 2005 landslide on the applicant's residence site released "10,000 cubic yards of material."[1] As shown in Exhibit 1, an internal North Coast Regional Water Quality Control Board ("Regional Water Board") memorandum regarding this landslide, the Regional Water Board authoritatively estimated that "the slide has loosened up to 10,000 yards of material." The applicant's letter claims that "[t]he purpose underlying the assertion of these inflated claims . . . is obvious." We doubt that the Regional Water Board harbored an ulterior motive in estimating the debris released by the landslide. Like NOWWE, the Regional Water Board simply wishes to end the environmentally destructive practices that have harmed this watershed in the past.

[1] The letter also faults other unspecified persons for allegedly claiming that "100,000 cubic yards" of material was released, but fails to identify the supposed source of this quotation.

Second, the letter repeatedly presents misleading and outright false information. For example, on page 13, the applicant professes incredulity that a complaint was filed "against a PRMD employee" for practicing geology without a license and remarkably states that *no* complaints filed against the PRMD employee (Ms. Swedenborg) or against RGH or Kleinfelder "have found a willing ear in those charged with overseeing such matters" (underscore in original). This is untrue. Exhibits 2, 4, and 5 to our November 5, 2009 letter show that RGH and Kleinfelder have been warned to discontinue doing substandard work by the State's licensing authority for geologists. As for Ms. Swedenborg, despite her status as a PRMD employee, she was indeed reprimanded for practicing geology without a license. *See* Exhibit 2.

Finally, the letter is almost entirely bereft of legal citation and evinces a misunderstanding of fundamental principles of environmental law. It argues, for example, that NOWWE's request that the County comply with CEQA by ensuring that the Project is geotechnically feasible *before* issuing an MND would

> impos[e] a significant financial burden on an applicant before any conditional approval is given. Such an approach has never been a requirement, and there is no authority for the notion that it should be the rule (one can well imagine how every application would grind to a halt due to the inability of an applicant to risk all design and investigation costs before even knowing if the project could be approved).

This point is not legally correct. Our letter presents ample authority demonstrating that *all* potential environmental impacts must be mitigated *before* an MND is issued. (*See* Guidelines [14 C.C.R.] § 15369.5, which clarifies that MNDs may only be issued where it is "*clear*[that] *no* significant effects on the environment will occur.") We cite extensive authority holding that public agencies violate CEQA if they condition the approval of MNDs on mitigation measures to be formulated by *future* studies (*see* pages 14-16 of our November 5 letter).

Contrary to the applicant's wholly unsupported claim, CEQA does not allow developers to avoid its requirements whenever they prove financially burdensome. The purpose of CEQA is not to suit the convenience of project applicants, but rather to "inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made." *Meija v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 330. CEQA contains a "low threshold requirement for the preparation of an EIR" precisely *because* issuing an MND has a "terminal effect on the environmental review process" and *prevents* further public input. *Citizen Action to Serve All Students v. Thornley* (1990) 222 Cal.App.3d 748, 754 (citations omitted). Where, as here, public input has exposed deficiencies in the reports submitted by the proponent's geologists, it is essential that the County not allow the applicant defer the formulation of geologic mitigation measures until after the Project is approved.

The most pertinent misstatements of law and fact by the Project proponent are briefly discussed below.

I. "THE LANDSLIDE"

This section of the Project proponent's letter runneth over with misleading information. While repeatedly insisting that "no human activity played any part in causing" the December 2005 landslide (Letter at 4), the applicant completely ignores the real problem: *a different* landslide "immediately downslope from the proposed wine factory." MND Attachment 14[2], at 5-6. *This* is the landslide that the buttress fill is intended to stabilize. *This* is the landslide whose stability has not been adequately assessed. The 2005 landslide that formed below the 245 Wappo Road residence is a *different* landslide. It is only relevant insofar as it formed "below a septic drain field" and thus demonstrates that improperly sited septic fields can have disastrous environmental consequences. *Id.* at 7. The other landslides, unmentioned in the applicant's letter, are of crucial importance because the buttress fill that is intended to stabilize them would sit on a slope whose stability has not been assessed, as discussed on page 11 of our November 5 letter.

The applicant seeks to discredit NOWWE's experts by implying that they are biased because NOWWE retained Dr. Stacy Li, a preeminent biologist with many decades of exemplary experience, instead of Matt O'Connor, a geo-morphologist/engineering geologist. Letter at 6-7. NOWWE retained a biologist for this task for the obvious reason that a biologist is more appropriately qualified than a geologist to undertake a detailed *habitat* inventory.

A third spurious claim warrants mention. The Project proponent argues that Mark West Creek is "no[t] . . . 'dead'[3]" based on Mr. O'Connor's conclusion that the stream was "in a condition typical of other waterways in the region." Letter at 6. The fact that other streams in the region are in a condition similar to Mark West Creek does not mean that all of these streams are healthy.

Finally, the applicant refers to Figures 5 and 6 of Mr. O'Connor's report for the unremarkable proposition that Mark West Creek contained water and juvenile salmonids in August 2008. Letter at 7. Curiously, these figures were omitted from the attachment, which skips from Figure 4 to Figure 7. Although this omission stymies response, it bears mention that NOWWE has never claimed that *no* water *ever* flows through Mark West Creek during the summer or that *no* juvenile salmonids *ever* live in it at that time. Instead, NOWWE has correctly observed that flows are so low (0.01 cfs, at times – *see* MND Attachment 12, at 4) that the Creek's Critical Habitat for steelhead is being destroyed, creating a risk that in the near future, Upper Mark West Creek will no longer support steelhead at all.

---

[2] "MND Attachment 14" is the document listed as number 14 in the list of "Other Attachments" to the MND (*i.e.*, the "Geologic review of updated RGH Geologic Report dated November 11, 2008 from the Engineering Geologist").

[3] The source of the "dead" quotation is not specified.

II. "WATER SCARCITY"

This portion of the letter has three shortcomings. First, it relies on unsupported assertions that the Project will use substantially less water than estimated. The Project proponent claims that he will use up to 80-90% less water than estimated through the use of nonconventional, advanced sanitization and barrel maintenance technologies. Letter at 8-9. These estimates, however, are not substantiated. Moreover, if these technologies are intended to mitigate the Project's water use rather than just packaging the applicant to sound like a responsible environmental steward, they should have been formally included in the MND as a mitigation measure. Since they have not, these claims should be disregarded as irrelevant.

Second, the applicant attacks NOWWE for its supposedly irrelevant reference to the fact that Pride Wineries was forced to import water due to inadequate groundwater supplies. The Project proponent claims that NOWWE is trying to "blame the perceived sins of Pride on Cornell." Letter at 10. This is not true. NOWWE noted that a nearby landowner using its land for the same purposes that the applicant is proposing had such meager groundwater supplies that it was forced to import water because this undisputed fact calls into question the adequacy of the Project's groundwater supply. As the Regional Water Board explained, "the fact that water is being trucked from late spring through early fall to one large landowner in the upper reaches of the watershed . . . is a testament to . . . just how serious the water issues are in this area." (*See* Attachment 9 to the MND, at 4.) Amen.

Finally, the Project proponent attacks NOWWE for not pursuing other supposedly illegal riparian water users instead of him. Letter at 11-12. This point defies logic. Unlawful activity is not excused because other violators may have evaded prosecution. Moreover, the mere fact that "no filings were located with the State Water Rights Board" for other riparian uses does not establish that these diversions are "simply an illegal diversion of water." *Id.* Water Code section 5108 specifically provides that the failure to file a statement of diversion and use shall *not* have "any legal consequences whatsoever."

In any event, even if there *were* illegal diversions of water along Mark West Creek, that would not excuse the applicant and this County from complying with CEQA. There is a "fair argument" that supplying the winery with water that would ordinarily flow into Mark West Creek "may" have significant environmental impacts for all of the reasons discussed in our November 5 letter, regardless of whether others are illegally diverting water from Mark West Creek. This means an EIR must be prepared. The applicant's ostensible concern about these putatively illegal diversions is unavailing.

III. AN EIR IS REQUIRED

Contrary to the applicant's implications, CEQA does not require NOWWE to show that the Project *will* have some *particular* environmental impact before an EIR is required. As

NOWWE has repeatedly pointed out, "since the preparation of an EIR is the key to environmental protection under CEQA, accomplishment of the high objectives of that act requires the preparation of an EIR *whenever* it can be *fairly argued* on the basis of substantial evidence that the project *may* have significant environmental impact." *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75. The California Supreme Court has also recognized that "the existence of serious public controversy concerning the environmental effect of a project," as here, "in itself indicates that preparation of an EIR is desirable." *Id.* at 85-86. The question, then, is not "what is the 'substantial adverse effect' on the environment" from the Project? (letter at 14), but instead "has the applicant demonstrated that it is *certain* that the Project will have *no* significant impacts?" The clear answer to this last question is *no*.

As discussed in NOWWE's November 5 letter, when presented with conflicting expert opinions regarding whether a project *may* have significant impacts, agencies are *not* free to choose between the expert opinions but are instead required to resolve the conflict in favor of the evidence tending to show that there *may* be a significant impact. *See* November 5 letter, at 3. Here, NOWWE's experts have testified that, among other things, (1) the Project's geologic reports fail to demonstrate that the Project is geotechnically feasible, meaning that avoidable landslides could result from approval (*id.* at 8-12), (2) the proposed conservation easement will not fully mitigate the Project's water use (*id.* at 4), (3) the hydrologic reports are missing crucial data and fail to meet all pertinent county requirements (*id.* at 7), and (4) the failure to mitigate *these* impacts will have further significant impacts on the federally-listed fish species present in Mark West Creek (*id.* at 12-14).

The Project proponent has made no attempt to rebut these dispositive findings by NOWWE's experts. Nor has he shown that their opinions do not constitute substantial evidence that the Project may cause a significant effect on the environment (aside from attempting to show bias on the part of Dr. Li, which is unpersuasive for the reasons discussed above). Because NOWWE's expert reports constitute "substantial evidence" showing there is a "fair argument" that Project approval "may" have significant impacts, an EIR is required.

A few of the applicant's remaining points warrant brief mention.

A. "WATER"

NOWWE and its experts pointed out on page 4 of our November 5 letter that the conservation easement is ineffectual as a mitigation measure because it fails to prohibit well withdrawals on the 100 Wappo Road property, meaning that the applicant could simply *pump* just as much water as would be gained by destroying the house and ostensibly forfeiting its riparian rights. The Project proponent responds that "it has always been Cornell's intention to limit the use of that well to emergency fire suppression only." This is irrelevant for the same reason that the Project's proposed use of sophisticated barrel-maintenance technologies is irrelevant: *it was not included as a required mitigation measure in the MND.* Guidelines section

15369.5 requires that project revisions intended to serve as mitigation measures must be made "*before* the [MND is] released for public review" (emphasis added). This was not done. If the applicant wishes to further modify his Project such that the conservation easement additionally prohibits well withdrawals, the MND will have to be revised and re-released.

NOWWE pointed out that the conservation easement is additionally ineffectual as a mitigation measure because Mark West Creek has almost no water in it during the summer. November 5 letter at 4-5. The applicant responds to this argument as follows:

> Actually, there is water in that section of the creek most of the year. The point is not simply that water will not be used when the creek is almost dry, it won't be used at any time. Cornell has offered this to circumvent any argument that he would simply pull from the creek for other purposes.

This is disingenuous at best. It may be true that there is some minimal flow in Mark West Creek most of the year. (After all, Dr. Li *did* find a 0.01 cfs flow – equivalent to a garden hose – "in late October 2008." MND Attachment 12, at 4.) Nonetheless, the fact that there is *virtually* no water in the creek during the times of year that most of the Project's water use will occur – "mid to late October" according to page 17 of the applicant's letter – is directly relevant to the question of whether the conservation easement "fully offset[s]" the Project's water use, as the MND claims on page 22. *If the creek has almost no water for a riparian rights holder to draw during the times of year when the Project will use most of its water, it is absurd to claim that forfeiting such a right will "fully offset" the Project's water use.*

B. "GRADING"

The applicant makes two points in support of his argument that the Project will have no adverse environmental impacts due to its geologic deficiencies. The first is the claim, discussed above, that "there is no authority for the notion" that "all [of] the [geologic] work which needs to be done . . . be done before a Condition Use Permit is . . . granted," because to impose such a requirement would be financially burdensome. At the very least, NOWWE has demonstrated that when expert geologists show that shortcomings in the applicant's geologic reports make the Project geotechnically *infeasible*, these shortcomings must be addressed.

The Project proponent also attacks NOWWE for presenting evidence of "malfeasance against certain professionals." To the contrary, the fact that *all* of the actual *geologists* whose work was relied on in the "Geology and Soils" section of the MND have been subjected to professional discipline for substandard work is highly pertinent to the County's review. It follows that the County may not facilely accept the validity of the applicant's geology reports, particularly in the face of specific deficiencies in these reports as exposed by NOWWE's experts. The Project proponent also claims that these "claims of malfeasance" are irrelevant because Kleinfelder had a geotechnical *engineer* stamp its report as well. However, geology reports must

be stamped by actual *geologists*.[4] The only geologist who stamped Kleinfelder's report was disciplined for repeatedly exhibiting negligence in his geologic work. *See* Nov. 5 letter at 10. That an engineer stamped the report also does not change this dispositive fact.

IV. CONCLUSION

The applicant's letter is unnecessarily vituperative, it is replete with misleading statements and factual inaccuracies, and it misstates the relevant law. It also fails to acknowledge or respond to the fully documented concerns of NOWWE's experts that the Project fails to fully mitigate its environmental impacts. An EIR must be prepared.

Thank you for considering our views on this important matter.

Very truly yours,

Stephan C. Volker
Attorney for New-Old Ways Wholistically Emerging

EXHIBITS

(1) North Coast Regional Water Quality Control Board memorandum dated April 18, 2006 re Landslide Notification – Wappo Road, Upper Mark West Creek

(2) Board for Geologists and Geophysicists letter to Ms. Sigrid Swedenborg dated July 29, 2005 re Compliance with Business and Professions Code Section 7800 *et seq.* (Geologist and Geophysicist Act)

[4] *See* Exhibit 2, at 2 ("all geologic documents on which public land-use decisions are made shall be certified by a Professional Geologist licensed with the Board" for Geologists and Geophysicists).

EXHIBIT 1

Memorandum

To: John Short

CC:

From: Paul Keiran

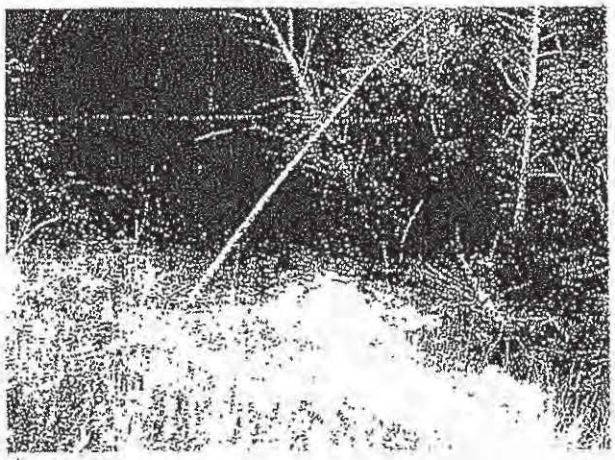
Date: 4/18/2006

Re: Landslide Notification – Wappo Road, Upper Mark West Creek

---

On Friday, April 14, 2006, in response to a complaint, I inspected an alleged landslide on Wappo Road. Wappo Road is a private road that intersects St Helena Road, just west of the Napa/Sonoma County lines. My inspection revealed that a large landslide exists behind a residence on Wappo Road, with the landslide discharging directly into a tributary to Mark West Creek (See map). The landslide is large, measuring approximately 200 feet by 80 feet, and deep, at places appearing to be at least 10 feet in depth. Continuous discharges to the Mark West Creek tributary are occurring and will continue to occur as this slide is very steep and active, as evidence by the number of large trees that have fallen back into the hillside as the slide progressed. It appears that the slide has loosened up to 10,000 yards of material.

Wappo Road Landslide



I will forward this information onto Department of Fish and Game and NOAA for their files and potential follow-up investigation. This slide will continue to produce sediments to the Mark West Creek system unless steps are taken to arrest its movement. I tried to contact the landowner but was unsuccessful at the time of inspection.

Map of Slide Area

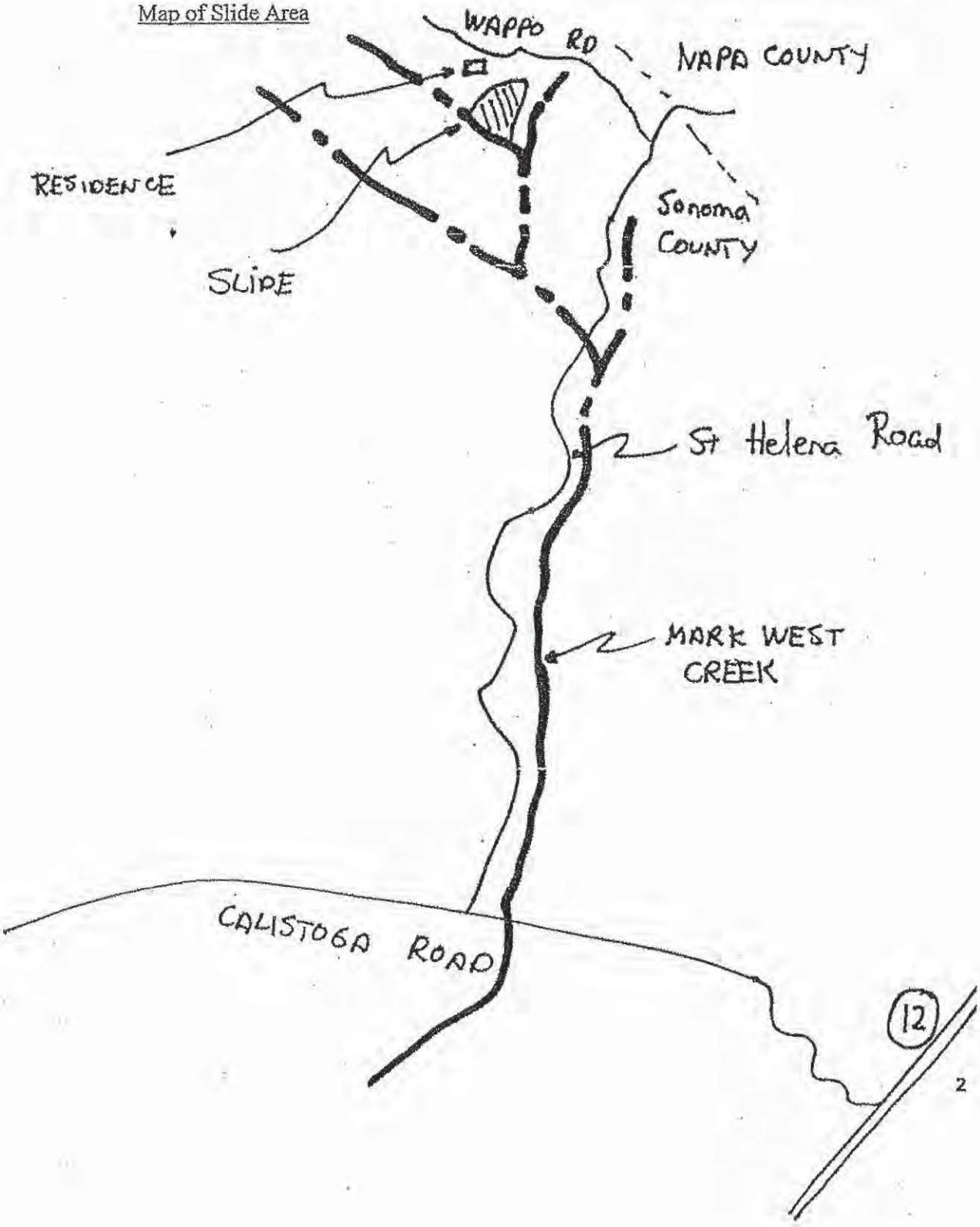


EXHIBIT 2

STATE OF CALIFORNIA - STATE AND CONSUMER SERVICES AGENCY

Arnold Schwarzenegger, Governor

BOARD FOR GEOLOGISTS AND GEOPHYSICISTS
2535 CAPITOL OAKS DRIVE, SUITE 300A, SACRAMENTO, CA 95833-2926
TELEPHONE: (916) 263-2113
FAX: (916) 263-2099
E-mail: geology@dca.ca.gov
Website: www.dca.ca.gov/geology

July 29, 2005

Ms. Sigrid Swedenborg
Solano County Planning Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Dear Ms, Swedenborg:

Subject: Compliance with Business and Professions Code Section 7800 et seq. (Geologist and Geophysicist Act)

The Board for Geologists and Geophysicists (Board) is responsible for regulating the practice of geology and geophysics in the state of California. The Board's mission is to continuously enhance the quality, significance and availability of geological and geophysical services offered to the people of California. The Board's goal is to protect the health, safety and welfare of California consumers who utilize the services of geologists and geophysicists.

The Board has received a copy of a report entitled "Source and Validity of 'Geologic Map' Presented by Planner Swedenborg, Cornell Winery Appeal Hearing", by Mr. Raymond Waldbaum, PG No. 3142, CEG No. 923 and dated June 7, 2005. This report includes a copy of a map presented by you in the June 7, 2005 hearing which appears to be the professional practice of geology (report and map attached).

Section 7832 of the Business and Professions Code requires an individual to be licensed as a Professional Geologist if he or she practices or offers to practice geology for others. Section 3003(f)(2) of Article 1, Division 29 Title 16 of the California Code of Regulations states:

> "The practice of geology or geophysics "for others" includes but is not limited to the performance of geological or geophysical services by any individual, firm, partnership, corporation or other association or by the employees or staff members thereof, whether or not the principal business of such organization is the practice of geology or geophysics, when the geological or geophysical reports, documents or exhibits constituting the practice of geology or geophysics are disseminated or made available to the public or any individual or combination of individuals other than the employees or staff of such organization in such a manner that the public or said individual or combination of individuals may reasonably be expected to rely thereon or be affected thereby."

Ms. Sigrid Swedenborg
July 29, 2005

In addition, Section 7835 of the Business and Professions Code states:

> "All geologic plans, specifications, reports or documents shall be prepared by a Professional geologist, or registered certified specialty geologist, or by a subordinate employee under his direction. In addition, they shall be signed by such Professional geologist or registered certified specialty geologist or stamped with his seal, either of which shall indicate his responsibility for them."

Activities that constitute the professional practice of geology include the use of initiative, skill, and independent judgment regarding determination of site geologic parameters such as evaluation of the existence or non-existence of possible landsliding and faulting. Further, independent evaluations involving geology must be certified by a licensed Professional Geologist who maintained responsible charge of the interpretive work defined in section 7835. Your mapping constituted the professional practice of geology and must therefore be performed by, or under the direction of, an appropriately California licensed Professional Geologist.

Under the facts presented to the Board, it appears that the review process in this case is not yet complete; please understand that all geologic documents on which public land-use decisions are made shall be certified by a Professional Geologist licensed with the Board. You are hereby advised that proper responsible charge maintenance and certification measures are mandatory.

A copy of the Geologist and Geophysicist Act and Rules and Regulations is posted on the Board's website at www.geology.ca.gov. If you need more information, clarification or have any other questions, please feel free to call me at (916) 263-0341.

Sincerely,

George Dunfield, PG
Enforcement Manager

cc: Mr. Gary Duke, Senior Board Counsel, Department of Consumer Affairs, Legal Office
Mr. Casey Caplinger, Complainant

Attachment: "Source and Validity of 'Geologic Map' Presented by Planner Swedenborg, Cornell Winery Appeal Hearing", dated June 7, 2005

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Stephan C. Volker
Joshua A.H. Harris
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February 10, 2010

VIA FACSIMILE, EMAIL AND U.S. POST
Fax: (707) 565-1103
DHARDY@sonoma-county.org

David Hardy, Supervising Planner
County of Sonoma, Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Re: NOWWE Objections to Scope of Work for Geotechnical Peer Review of Cornell Winery Project (Application UPE07-0008)

Dear Mr. Hardy:

INTRODUCTION

It has come to our attention that the County Permit and Resource Management Department ("PRMD") has retained a geotechnical reviewer, Cotton-Shires, to quickly perform a peer review of the geologic reports submitted by the project proponent and others in connection with the Cornell Winery project. PRMD requests that Cotton-Shires write

> [w]ithin 10 working day[s] of authorization, . . . a letter commenting on the adequacy of the RGH [Preliminary Geologic Study Report dated May 31, 2006 and revised April 22, 2008 and RGH Response to BZA Comments, dated September 21, 2009], the Kleinfelder Review [letters dated July 2, 2008 and October 2, 2009], and the validity of comments by [Ray] Waldbaum [dated November 11, 2008, October 1, 2009 and October 23, 2009] and [James] Robinson [dated October 23, 2009], relative to whether the keyed buttress recommended by RGH will alleviate the load on the downhill side [of the proposed Cornell Winery project] such that the natural conditions are not affected by the winery. The peer review will address whether the RGH evaluation and the Kleinfelder peer review conform to the standards set forth in the California Geological Survey Special Publication 117A, and whether the recommended mitigation are sufficient to reduce the risks to an "Acceptable Level" as defined in Publication 117A.

The assignment also asks Cotton-Shires to address as part of its peer review the following "fundamental CEQA questions":

Would the project:

A. Expose people or structures to potential adverse effects, including the risk of loss, jury, or death, involving:

- 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 the Division of Mines and Geology Special Publication 42.
- Strong seismic ground shaking?
- Seismic-related ground failure, including liquefactions?
- Landslides?

B. Result in substantial soil erosion or the loss of topsoil?

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?

Sonoma County PRMD, "Scope of Work" assignment transmitted to Cotton-Shires in January or February 2010 (copy attached).

On behalf of our client, New-Old Ways Wholistically Emerging ("NOWWE"), we have the following four principal concerns regarding the scope of the project, the materials to be reviewed, and the questions to be addressed.

I. THE SCOPE OF WORK IGNORES CEQA'S "FAIR ARGUMENT" STANDARD

First, since "[t]he peer review assignment is intended to become part of an Initial Study under the California Environmental Quality Act, the purpose of which is to determine whether the Cornell Winery project may have a significant effect on the environment and thus require preparation of an environmental impact report ("EIR"), the question is not "[w]ould the project" have the consequences listed in the Scope of Work, but rather, whether the lead agency – PRMD – has been presented with "substantial evidence in the record" supporting "a fair argument that

[the] project may have a significant effect on the environment . . . ." CEQA Guidelines § 15064(f)(1). If the answer is yes, then an EIR is required.

It is the purpose of the EIR to determine whether the project would have the impacts listed in your Scope of Work's task number 5. Only if "there is no substantial evidence in light of the whole record before the public agency that the project [including any mitigation or other revisions] may have a significant effect on the environment" may a mitigated negative declaration rather than an EIR be prepared. CEQA Guidelines § 15064(f)(2). "Said another way, if a lead agency is presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect . . . ." CEQA Guidelines § 15064(f)(1), citing *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68.

II. THE PEER REVIEWER, NOT PRMD, SHOULD DETERMINE THE GEOTECHNICAL ISSUES TO BE ADDRESSED

Second, the geotechnical issues to be considered and addressed by Cotton-Shires should *not* be narrowly dictated by the County. Instead, the nature and scope of geotechnical factors to be considered by Cotton-Shires should be determined by the professional judgment of the reviewer based on the actual project location and design, and the unique geologic and geotechnical characteristics of the site.

Using this approach, the following deficiencies in the RGH consulting work and the Kleinfelder reviewing work for the Cornell Winery Project would be identified using published Standard of Practice guidance that governs the practice of Engineering Geology and Geotechnical Engineering in California:

- The "Site Geologic Map" is not based on a topographic map. This violates California Division of Mines and Geology **(CDMG) Note 44** that states "All Mapping should be done on a base with satisfactory horizontal and vertical control – in general a detailed topographic map."

- The "Site Geologic Map" does not include one of the most critical areas for determining site stability, the toe of the descending slope, described by RGH Consultants as ". . . a deep ravine." This also violates **CDMG Note 44** that states "Each report must be a product of independent geologic mapping of the subject area at an appropriate scale and in sufficient detail to yield a maximum return of pertinent data. *In connection with this objective, it may be necessary for the geologist to extend his mapping into adjacent areas*" (emphasis added).

- The "Site Geologic Map" does not present geologic data from surface mapping

and subsurface data from the borings and trenches as required by Chapter 5 of **CDMG Special Publication 117** that requires that Geologic Maps depict " . . . rock discontinuities such as bedding, jointing, fracturing and faulting . . ." The Geologic Map is supposed to be the geologic data base supporting the geologic and geotechnical conclusions and recommendations and there are no map data presented by RGH Consultants.

- The descriptions of soil and rock materials in the trench and boring logs in the RGH reports are inconsistent and contradictory. Some similarly described materials (e.g., logs of core borings 2 through 5 and logs of TP-12 through TP-15) are inconsistently identified as bedrock and landslide debris. This very strongly suggests an inability by RGH and Kleinfelder to differentiate between intact bedrock and landslide debris, a fatal flaw in the geotechnical site investigations by RGH and the geotechnical reviews by Kleinfelder. This indicates a lack of competence as defined by the **Geologist Registration Act of 1968**.

- Failure of RGH to provide and Kleinfelder to require that the location and dimensions of the buttress fill intended to support the slope be based on a stability analysis and to be shown in plan and section view, utilizing the procedures outlined in **CDMG Special Publication 117** to provide acceptable factors of safety.

The foregoing is a partial list of deficiencies in the work of RGH and Kleinfelder based upon two published documents that set the standard of practice of Engineering Geology and Geotechnical Engineering in the State of California. There are scores of similar documents prepared by public agencies (cities, counties, CDMG and United States Geological Survey) and professional societies that form the standards of practice of Engineering Geology and Geotechnical Engineering in the State of California.

The geotechnical reviewer must be free to identify the standards of practice that are applicable to the individual site and project without artificial constraints being imposed by Sonoma County PRMD.

III. THE MATERIALS THAT PRMD PROVIDED TO COTTON-SHIRES ARE INCOMPLETE

Third, the short list of materials provided to Cotton-Shires (see attached Scope of Work at paragraph number 1) omits numerous highly pertinent reports.

The following relevant reports by James Robinson and Raymond Waldbaum were not provided to Cotton-Shires:

Robinson dated 11-3-09.

Waldbaum dated 11-4-09, 1-21-08, 1-2-08, 6-9-05 and 1-31-05.

These reports present vital information that forms the basis for subsequent reports that were provided to Cotton-Shires, and should be provided to Cotton-Shires.

IV. PRMD'S SCOPE OF WORK IGNORES THE PROJECT'S IMPACTS ON WATER

Fourth, PRMD's "Scope of Work" omits any reference to one of the most important geo-hydrological issues posed by the Cornell Winery project: the project's impacts on water. As literally dozens of commenters have already pointed out in the public record, the project's dependence, and impacts, on water is a key physical constraint on its development. Its potential adverse impacts on both the quantity and quality of water is a key consideration in any competent geotechnical assessment. Yet PRMD's Scope of Work fails to ask Cotton-Shires to address this issue. Because the availability of water for the project, and this project's potential adverse impacts on the quantity and quality of water available for natural processes and public trust uses has both direct and indirect implications for the project's geotechnical safety (e.g., impacts on erosion, subsidence, landslides, and the like) this issue should be included among those to be addressed by Cotton-Shires. In conducting this review, Cotton-Shires should be directed to consider the numerous consultant reports on this issue as well as the reviews by James Robinson and reviewing state agencies (including the enforcement action brought by the California Board for Geologists and Geophysicists against RGH Consultants).

Your prompt attention to the foregoing comments is respectfully requested. Do not hesitate to contact me if you have any questions regarding this letter, or need assistance in compiling the relevant reports for submission to Cotton-Shires.

Very truly yours,

Stephan C. Volker
Counsel for New-Old Ways Wholistically Emerging

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February 24, 2010

VIA EMAIL, FACSIMILIE, AND U.S. MAIL

Honorable Paul Kelley, Chairman
Mike Kerns, Member
Valerie Brown, Member
Shirlee Zane, Member
Efren Carrillo, Member
Sonoma County Board of Supervisors
575 Administration Drive, Room 100A
Santa Rosa, CA 95403

Board of Zoning Adjustments
c/o Permit Resource Management Department
County of Sonoma
2550 Ventura Avenue
Santa Rosa, CA 95403
(via facsimile and U.S. Post only)

Re: Henry Cornell Winery Project, 245 Wappo Road

Dear Supervisors and Board of Zoning Adjustments:

On behalf of New-Old Ways Wholistically Emerging ("NOWWE"), we respectfully submit the following comments on the February 2010 Permit Resource Management Department ("PRMD") Staff Report concerning the proposed Henry Cornell Winery Project ("Project") at 245 Wappo Road, Santa Rosa. This letter incorporates by reference the letters and exhibits submitted by NOWWE on October 8, 2009, November 5, 2009, and November 11, 2009. Please include this letter in the public record on this matter.

I. INTRODUCTION

As previously discussed, the applicant is proposing to develop a winery in the immediate vicinity of Mark West Creek, which houses an extremely sensitive ecosystem and in recent years has had chronic problems with siltation and low flow due to deforestation and improvident development of its upper watershed.

In previous comment letters, NOWWE documented the extensive case law demonstrating the "low threshold requirement for the preparation of an EIR." *Citizen Action to Serve All Students v. Thornley* (1990) 222 Cal.App.3d 748, 754. "[T]he preparation of an EIR" is required "whenever it can be *fairly argued* on the basis of substantial evidence that the project *may* have significant environmental impact." *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75. Illustrating this low standard is the fact that "[i]f there [i]s substantial evidence that the proposed project *might* have a significant environmental impact, *evidence to the contrary is not sufficient to support a decision to dispense with preparation of an EIR* and adopt a negative declaration, because it could be 'fairly argued' that the project might have a significant environmental impact." *Friends of 'B' Street v. City of Hayward* (1980) 106 Cal.App.3d 988, 1002 (emphasis

added). In other words, "if there is disagreement among expert opinion support by facts over the significance of an effect on the environment, the Lead Agency shall treat the effect as significant and shall prepare an EIR." CEQA Guidelines [14 C.C.R.; "Guidelines"] § 15064(g).

The Staff Report evinces a fundamental misunderstanding of these principles. It unlawfully rejects the well-supported opinions of NOWWE's experts in favor of expert opinions that support the Project proponent. Yet the credibility of NOWWE's experts has been bolstered by the recent Cotton, Shires, and Associates ("CSA") peer review. The County ignores NOWWE's warnings at its peril.

Overall, the Staff Report contains four significant shortcomings. First, it misperceives the import of the 2009 Habitat Inventory commissioned by Dr. Stacy K. Li. Second, it ignores the fact that the winery's water usage cannot be offset with a riparian water right that does not produce any water during the times of year that water is most needed by the winery. It also demonstrates a misunderstanding of the definition of "project" under CEQA. Third, it baselessly rejects the necessity of a constant-rate aquifer test that would provide more information about groundwater resources that will be affected by the Project, even though experts have repeatedly testified that such a test is essential and even though such a test is required by Sonoma County's own policies. Fourth, the recent geologic peer review completed by CSA fails to address whether the proposed site of the Project's septic system is geologically stable.

II. THE STAFF REPORT DISREGARDS THE CRITICAL IMPORTANCE OF THE LI HABITAT INVENTORY

The Staff Report misapprehends the import and significance of the Habitat Inventory completed by Dr. Stacy K. Li in 2009. The Staff Report states that "staff has several concerns about use of the report and cautions against drawing conclusions from this report relative to the project." Staff Report, at 7. This is because "[t]he report does not discuss the current project; it only discusses the impacts of [a] 2006 landslide." *Id.* The Staff Report concludes, "While the impacts of th[at] landslide may be significant, mitigation of th[at] landslide['s] impacts are a separate issue from this Use Permit." *Id.* This misunderstands the function of the Li report. The Li report demonstrates that steelhead habitat has been substantially degraded by sedimentation and low stream discharge in the past, and any further degradation of this habitat or reduction in its water supply could extirpate this endangered species from this watershed.

The Li report and the other documents cited on pages 12-14 of our November 5, 2009 letter are relevant because they demonstrate that (1) there is a "fair argument" that the Project "may" have cumulatively significant impacts on the federally listed species present in Mark West Creek if the Project uses even a small amount of water during the dry season; and (2) there is a "fair argument" that additional siltation in Mark West Creek "may" have similarly disastrous cumulative impacts on the federally listed species present in Mark West Creek. November 5, 2009 letter, at 12-14. Because the project's water use during the dry season will not be "fully offset," as claimed, and because the Project still contains geotechnical shortcomings, the Li

report, along with the rest of the evidence before the Board, demonstrates that there is a "fair argument" that Project approval "may" have significant impacts. Accordingly, an EIR is required.

III. THE PROPOSED CONSERVATION EASEMENT DOES NOT OFFSET THE PROJECT'S WATER USE

NOWWE has previously objected to the proposed conservation easement, which is intended to offset the Project's groundwater use by prohibiting water use at the neighboring 100 Wappo Road parcel. *E.g.,* November 5 letter, at 4-6; November 11 letter, at 5-6. In response, the conservation easement was modified so as to prohibit well and pond withdrawals. Staff Report at 1-3. However, the conservation easement still fails to mitigate the Project's water use, because "the creek to which the easement would apply typically has no water in the dry season and thus the parcel owner has no surface flow to 'swap.'" November 5 letter, at 4. "If [Mark West C]reek has almost no water for a riparian rights holder to draw during the times of year when the Project will use most of its water, it is absurd to claim that forfeiting such a right will 'fully offset' the Project's water use." November 11 letter, at 6.

The Staff Report responds to this obvious shortcoming as follows: "Staff simply notes that, absent the conservation easement, Mr. Cornell can sell the property to a family who could move into it full time, plant a garden, keep animals, and use as much water as the winery uses, if not more." Staff Report, at 2. But this response is wholly irrelevant.

The idea seems to be that (1) a three bedroom house is estimated to use 0.5 acre-feet per year ("AFY")[1]; (2) the winery is estimated to use only 0.42 AFY[2]; and (3) since 0.5 is larger than 0.42, the winery's water use will be "fully offset" by the conservation easement.[3] But this reasoning suffers from the same flaws that the Todd Engineers cumulative impact analysis did: it "assumes that Mark West Creek's flow is evenly distributed throughout the year, whereas in reality the flows are *much* lower during the dry season – precisely when the Project's water needs will be highest (Exhibit 9 at 2) – than they are in the wet season." November 5 letter, at 6. Indeed, the prior owner of 100 Wappo Road was forced to drill a well onsite *because water stopped flowing through Mark West Creek during the summer*. Staff Report, Attachment I, Farhat letter dated June 15, 2008, at 1.

If the conservation easement is going to "fully offset" the Project's water use such that there can be no "fair argument" that the Project "may" have significant environmental impacts, *it must fully offset the Project's water use at each and every time of the year*. Whether or not the annual water use of a three-bedroom house is greater than the annual water use of a winery is

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[1] Staff Report, Attachment H, Klienfelder November 12, 2009 letter ("Attachment H"), at 2.
[2] *Id.; see also* October 12, 2009 Re-Circulated Mitigated Negative Declaration ("Re-Circulated MND"), at 22.
[3] Attachment H, at 2.

beside the point. What *is* important is that, *each time* the winery draws water, an equivalent amount of water is *simultaneously* being forfeited at the 100 Wappo Road parcel. But this will not be the case with the proposed conservation easement, because household water use does not suffer from the same seasonal variability that winery water use does.

Even assuming that *annual* household water use *is* lower than *annual* winery water use, the difference in seasonal water use between the two will mean that the conservation easement, if approved, will have the effect of increasing the two parcels' water use in the late summer and early fall months, when winery use is highest and flows are lowest, and decreasing the two parcels' water use during other times of year, when water already flows through Mark West Creek.

Any even slight increase in the amount of water used by the two parcels during the dry season will have significant cumulative environmental impacts for all of the reasons discussed in our prior letters. *See* October 8, 2009 letter, at 4, 8-9, and citations therein; November 5, 2009 letter, at 7-8, 12-14, and citations therein. Therefore, the conservation easement will not mitigate the Project's water use; there exists "substantial evidence" that the Project's increased dry season water use "may" cause significant environmental impacts; and an EIR is accordingly required.

Similar objections are applicable to the new suggested condition of approval, which would require the Project proponent to install a rainwater harvesting system on his roof and parking lot. But rain does not typically fall during the dry season, and there is nothing in the Staff Report to indicate that the harvested rainwater would be used during the dry season. Nor is there any attempt to estimate how much water would be harvested with such a method; Mr. Bonds' estimates are based on a 10,000 square foot parking lot, but the Project only has 22 parking spaces. *Compare* Staff Report, Attachment C, DWR letter dated 12/21/2009, at 2 *with* Re-Circulated MND, at 1.

Finally, staff claims that Todd Engineers and NOWWE "mischaracterize 'the project'" and "misunderstand[] . . . the project description." Staff Report, at 3. In staff's opinion, this is because "[t]he vineyard already exists on the owner's property and is not a part of the proposed winery Use Permit application." *Id.* But it is staff who misunderstands the definition of "project" under CEQA. Because here a winery *and* vineyard *had been planned all along as one project*, the "Project" here includes the water use of *both* the winery *and* the vineyard. "'Project' means the whole of an action. . . ." Guidelines § 15378(a). "The term 'project' does not mean each separate governmental approval." *Id.* § 15378(b).

"A public agency is not permitted to subdivide a single project into smaller individual sub-projects in order to avoid the responsibility of considering the environmental impact of the project as a whole. 'The requirements of CEQA, cannot be avoided by chopping up proposed projects into bite-size pieces which, individually considered, might be found to have no significant effect on the environment or to be only ministerial.' 'The term "project," means the *whole of an action* which has a potential for physical impact on the environment, and the term

"project" refers to the underlying activity and not the governmental approval process.' 'It is, of course, too late to argue for a grudging, miserly reading of CEQA. The Legislature intended CEQA to be interpreted in such manner as to afford the *fullest possible protection* to the environment within the reasonable scope of the statutory language. . . . [T]he mandate of CEQA [is] that environmental considerations do not become submerged by chopping a large project into many little ones – each with a minimal potential impact on the environment – which cumulatively may have disastrous consequences.'" *Orinda Ass'n v. Bd. of Supervisors* (1986) 182 Cal.App.3d 1145, 1171-72 (internal quotation marks, citations, ellipses, and brackets omitted; italics in original).

As demonstrated by the attached exhibit – Cornell's report to PRMD admitting that as of November 1, 2002 Cornell was "[l]ooking for possible winery" at this site – a winery was clearly planned since at least 2002, pre-dating the vineyard. Therefore, the "whole of [the] action" here *includes both the vineyard and the winery.* The water use of both must be considered, and mitigated.

IV. A CONSTANT-RATE AQUIFER TEST IS REQUIRED

NOWWE and its experts have previously pointed out that a constant-rate aquifer test, not a short-term airlift well test, is required to assess the Project's impacts on groundwater availability. *See, e.g.,* October 8, 2009 letter, at 5, and citations therein; November 5, 2009 letter, at 7, and citations therein; Robinson Decl., Exhibit 9 to November 5, 2009 letter, at 3. The California Department of Water Resources concurred. Re-Circulated MND, at 21. In short, experts have testified "that an aquifer pump test is required to adequately evaluate potential impacts from Cornell groundwater withdrawals on local-area water resources, and, in turn, ecological conditions sustained by dry-season, groundwater-fed baseflow in the Northern and Southern drainage area creeks." Exhibit F to October 8, 2009 letter, at 3. Until this is done "the water availability of the site is simply unknown." Exhibit 9 to November 5, 2009 letter, at 3.

The Staff report offers two reasons why a constant-rate aquifer test is not being required. First, "the geologic environment is extremely complex," the "extensive cooperation that" such a test requires "may or may not be available," and the test "may or may not yield any meaningful information." Staff Report, at 2-3. In essence, it is too complicated and expensive to do the constant-rate aquifer test. Second, it is not required because the conservation easement "will sufficiently offset the winery water use." *Id.* at 3. However, whether a constant-rate test is expensive and difficult to conduct has no bearing on whether doing so is required by CEQA, and as discussed above the conservation easement will not "fully offset" the Project's water use.

NOWWE has previously pointed out that "CEQA does not allow developers to avoid its requirements whenever they prove financially burdensome. The purpose of CEQA is not to suit the convenience of project applicants, but rather to 'inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made.'" November 11, 2009 letter, at 2 (quoting *Meija v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 330).

The Project proponent must *affirmatively demonstrate* that its Project *will* have *no* significant environmental impacts due to its water use. Every expert aside from Todd Engineers who has opined on the matter has insisted that a constant-rate aquifer test is required to assess the environmental impacts of the Project's water use.[4] As noted above, when faced with conflicting expert opinions supported by fact,[5] the County must accept those opinions tending to show that a significant impact will occur. Therefore, the County must require a constant-rate aquifer test.

Finally, as NOWWE's experts have also pointed out previously, the applicant has not complied with items 9-12 and 13-17 on the mandatory Groundwater Checklist for Sonoma County. Exhibit 9 to November 5, 2009 letter, at 5. Moreover, neither did Cornell comply with County General Plan Water Element Policy WR-2(e). *Id.* The Staff Report dismisses these objections, stating that "[p]roject opponents and hydrology experts disagree about the methodology and conclusions," as if their concerns may therefore be ignored. Staff Report, at 2. But, again, "credible expert testimony that a project *may* have a significant impact, even if contradicted, is generally dispositive; and under such circumstances, an EIR must be prepared." Remy, *et. al, Guide to CEQA* (11th ed. 2006), at 262. No effort was made to show that NOWWE's experts are not credible. Therefore, their testimony, "even if contradicted, is . . . dispositive; and . . . an EIR must be prepared." *Id.*

V. GEOLOGIC INVESTIGATION OF THE PROPOSED SEPTIC SYSTEM SITE IS STILL INADEQUATE

After the MND was re-circulated, NOWWE pointed out that "[a]lthough the septic system has been relocated away from one known landslide, it has been relocated to an area that may contain another landslide. . . . [A]lthough RGH attributed the potential landslide at this new location to 'grading for an old roadway,' the landslide is actually *outside* the area that was graded for the roadway. . . . Additional studies are needed to verify that the landslide is not instead reflective of 'a failure within weak natural soils and/or weak landslide debris and/or weak

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[4] The Staff Report claims that DWR "has revised its position" on the necessity of a constant-rate aquifer test. However, the DWR letter attached to the Staff Report does not mention this issue, and no documentation of nor explanation for the claimed change in DWR's position is mentioned in the Staff Report.

[5] The Staff Report implies that NOWWE's experts are unreliable because they used a definition of "project" that staff claims is erroneous. *E.g.*, Staff Report at 3 ("Whether a 'fair argument' has been made that there may be a significant impact must take into account the accuracy of the facts and premises used in the analysis," and NOWWE and the applicant disagree as to what the "project" is.) Assuming *solely for the sake of argument* ***only*** that staff is correct regarding the proper definition of "project," this is an insufficient basis to disregard NOWWE's expert testimony about the need for a constant-rate aquifer test under CEQA. NOWWE's expert testimony that a constant-rate aquifer test was required was not premised on the amount of water used by the winery. For example, the section of Mr. Kamman's report discussing the constant-rate aquifer test requirement *does not even mention the amount of water that the Project will use.*

bedrock that exists in the leachfield area.' Unless this is shown, it is impossible to know whether the leachfield's water will have a 'critical destabilizing effect' on the slope." November 5, 2009 letter, at 9 (citing Waldbaum Decl., Exhibit 7 to November 5, 2009 letter, at 4).

The Staff Report does not mention this issue. The fact that the CSA peer review upheld the geologic deficiencies that NOWWE's experts previously noted shows that, at the very least, it is unreasonable to dismiss these same experts' other geologic (and hydrologic) concerns out of hand. The County *must* require the applicant to further study the stability of the leachfield site if the Project's geologic deficiencies and resulting environmental impacts are to be mitigated.

VI. CONCLUSION

The Staff Report demonstrates a misunderstanding of the relevant legal principles in that it repeatedly rejects the concerns of NOWWE's experts based on disagreement only. It is also is flawed in four substantial respects. First, the Staff Report misunderstands the relevance of the Li report. Second, the proposed conservation easement will not offset the Project's water use, because it proposes to offset the winery's water use with a water right that is unproductive during the dry season. Third, a constant rate aquifer test must be conducted. Finally, additional geotechnical studies must be conducted to demonstrate the stability of the proposed leachfield site. As before, an EIR is required for this Project.

Thank you for considering our views on this important matter.

Very truly yours,

Stephan C. Volker
Attorney for New-Old Ways
Wholistically Emerging

EXHIBIT

(1) County of Sonoma Permit and Resource Management Division, Request for Service dated November 1, 2002

REQUEST FOR SERVICE

County of Sonoma
Permit And Resource Management Department
Well & Septic Section
2550 Ventura Avenue, Santa Rosa, CA 95403 (707) 565-1900

Location Address	City, Zip
420 WAPPO ROAD	SANTA ROSA 95404
Owner/Facility Name	**Assessor's Parcel #**
HENRY CORNELL / CORNELL WINERY	028-260-047
Address of Owner	**City, State, Zip**
2555 LAGUNA RD (GUY DAVIS, G.M.)	SANTA ROSA 95401
Person Requesting Service	**Phone**
TOM CONNELL (ATTERBURY + ASSOC.)	433-0134
Address of Person Requesting Service	**City, State, Zip**
16109 HEALDSBURG AVE, #D	HEALDSBURG 95448
Description	
SOIL PROFILE PIT INSPECTION FOR SEPTIC SYSTEM (PRE-PERC)	
	By

Date 11/1/02
Permit # SEWD2-137
EHS _____ Dist # ___
Category ____ Priority ___

Classification:
A. Complaint
B. Site Review
C. Plan Check
D. Recheck/Reinspection
E. Vesting
F. _____

Disposition:
1. Service Completed
2. Follow Up
3. Referral
4. Referral Completed
5. Enforcement
6. No Violation
7. No Action

Report of Investigation

Pre perc conducted on 11/21/02 with Tom Connell of Tom Atterbury Assoc. Site was on a hillside where trees had been cleared. Area of profile hole 1 is too rocky. Can use the area of hole 2 & 3 and split the distance between holes 1 & 2 and use the ½ close to hole 2.

Looking for possible wineries ~~[illegible]~~ this area has limited potential due to small size. Possible for standard system may be able to use an inovative system if you can meet slope requirements.

For office use

EHS

1/6/02
Date Completed

8855A0000#11/01/02 SUSTTL 272.00

Stephan C. Volker
Joshua A.H. Harris
Shannon L. Chaney
Alexis E. Krieg
Stephanie L. Abrahams
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10.453.01

March 31, 2010

VIA FACSIMILE, EMAIL, AND U.S. POST

David Hardy, Supervising Planner
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Fax: (707) 565-1103
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Board of Zoning Adjustments
c/o Permit Resource Management Department
County of Sonoma
2550 Ventura Avenue
Santa Rosa, CA 95403
(via facsimile and U.S. Post only)
Fax: (707) 565-1103

Re: NOWWE Response to Commissioners' questions regarding Groundwater Availability Testing Procedures for Cornell Winery Project

Dear Commissioners:

Following the close of the public portion of the Board of Zoning Adjustments hearing on February 25, 2010, Commissioners asked staff about the groundwater availability testing procedures required by the County for projects in water-scarce areas. Specifically, Commissioner Shahhoesseini inquired about the requirement for documentation of water availability on neighboring parcels, a requirement that was jettisoned in the most recent staff report on the Cornell Winery Project, ostensibly due to cost and logistical considerations. Commissioner Davis asked whether sustained aquifer testing was a County requirement. These questions were not answered correctly, and the requested information (although available to your staff) was not provided to the Board. Accordingly, NOWWE takes this opportunity to inform the Board as to the required procedures, and to provide the relevant documentation.

The following documents, which are attached, establish the County's requirements for groundwater testing in groundwater-scarce areas such as the upper Mark West Creek watershed that Cornell proposes for development:

1. Items 1-31 of the *Sonoma County Groundwater Studies Checklist ("Checklist")*;

2. The County's *Procedure for Implementing General Plan Policy RC-3h* [currently Policy WR-2(e)] ("*Policy*");

3. PRMD publication number 9-2-28, *Well Pump Test Guidelines in Water Scarce Areas* ("*Guidelines*")

Because the proposed Project is located in a Class IV "Water Scarce" area, the highest level of scarcity, "[t]est wells are required . . . by Sections 7-12 and 25-179 of the Sonoma County Code." *Policy*, at 1. The Sonoma County General Plan requires the County to "[d]eny discretionary applications unless a geologic report establishes the groundwater supplies are adequate and will not be adversely impacted by the cumulative amount of additional development." *Id.* All of these policies, including all 31 items on the *Checklist*, *must* be satisfied before a discretionary approval can be granted.

These requirements have not been met. Cornell's consultant, Kleinfelder, admitted in correspondence to the County dated March 5, 2008, that the testing required by Items 9 through 12 on the *Checklist* was *never done*. Instead, Kleinfelder claimed that the County's requirements were "not necessary." NOWWE's experts have previously pointed out that this self-granted exemption was improper and that, additionally, items 13 through 17 on the Checklist were likewise *not met*. *See* Robinson Decl., Exhibit 9 to November 5, 2009 letter, at 2-3 (finding it "completely inappropriate" for Kleinfelder to claim that the required testing is "not necessary," because (1) there is ample evidence in the record – such as Pride Winery's need for water *deliveries* – that local groundwater supplies are *not* adequate, and (2) Kleinfelder's "task [wa]s to confirm compliance with published standards, not to decide which standards [Kleinfelder] think[s] are important . . . and which much be complied with or not"); *id.* at 5 (*Checklist* items 9-17 *not met*).

As NOWWE recently observed (in its February 24, 2010 letter, at 5):

> NOWWE and its experts have previously pointed out that a constant-rate aquifer test, not a short-term airlift well test, is required to assess the Project's impacts on groundwater availability. *See, e.g.*, October 8, 2009 letter, at 5, and citations therein; November 5, 2009 letter, at 7, and citations therein; Robinson Decl., Exhibit 9 to November 5, 2009 letter, at 3. The California Department of Water Resources concurred. Re-Circulated MND, at 21. In short, experts have testified "that an aquifer pump test is required to adequately evaluate potential impacts from Cornell groundwater withdrawals on local-area water resources, and, in turn, ecological conditions sustained by dry-season, groundwater-fed

> baseflow in the Northern and Southern drainage area creeks." Exhibit F to October 8, 2009 letter, at 3. Until this is done "the water availability of the site is simply unknown." Exhibit 9 to November 5, 2009 letter, at 3.

See also NOWWE's October 8, 2009 letter, at 5 (quoting DWR's conclusion that "Short-term airlift well testing results were used as the basic data set to analyze the groundwater availability and estimate the potential impacts of this project. This type of testing . . . is of limited value for evaluating long-term well yields and water level impacts to other wells and surface water features . . . . The most appropriate test . . . is a constant-rate aquifer test.").

The most recent staff report found that a constant-rate test was not necessary because it would be too expensive and logistically complicated to conduct. But neither County ordinance nor CEQA allows applicants to avoid mandated environmental investigations on the grounds they are expensive or burdensome. Accordingly, the County must require the applicant to satisfy the *Checklist*, *Policy*, and *Guidelines*, and conduct a constant-rate aquifer test.

Finally, NOWWE has already demonstrated the shortcomings within the proposed conservation easement, which is intended to offset the Project's groundwater use by prohibiting water use at the neighboring 100 Wappo Road parcel. *E.g.,* NOWWE's November 5, 2009 letter, at 4-6; November 11 letter, at 5-6. In response, the conservation easement was modified so as to prohibit well and pond withdrawals. Staff Report at 1-3. However, the conservation easement still fails to mitigate the Project's water use, because "the creek to which the easement would apply typically has no water in the dry season and thus the parcel owner has no surface flow to 'swap.'" November 5 letter, at 4. "If [Mark West C]reek has almost no water for a riparian rights holder to draw during the times of year when the Project will use most of its water, it is absurd to claim that forfeiting such a right will 'fully offset' the Project's water use." November 11 letter, at 6.

The Staff Report responds to this obvious shortcoming as follows: "Staff simply notes that, absent the conservation easement, Mr. Cornell can sell the property to a family who could move into it full time, plant a garden, keep animals, and use as much water as the winery uses, if not more." Staff Report, at 2. But this response is wholly irrelevant.

The idea seems to be that (1) a three bedroom house is estimated to use 0.5 acre-feet per year ("AFY")[1]; (2) the winery is estimated to use only 0.42 AFY[2]; and (3) since 0.5 is larger than 0.42, the winery's water use will be "fully offset" by the conservation easement.[3] But this

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[1] Staff Report, Attachment H, Klienfelder November 12, 2009 letter ("Attachment H"), at 2.
[2] *Id.; see also* October 12, 2009 Re-Circulated Mitigated Negative Declaration ("Re-Circulated MND"), at 22.
[3] Attachment H, at 2.

reasoning suffers from the same flaws that the Todd Engineers cumulative impact analysis did: it "assumes that Mark West Creek's flow is evenly distributed throughout the year, whereas in reality the flows are *much* lower during the dry season – precisely when the Project's water needs will be highest (Exhibit 9 at 2) – than they are in the wet season." November 5 letter, at 6. Indeed, the prior owner of 100 Wappo Road was forced to drill a well onsite *because water stopped flowing through Mark West Creek during the summer*. Staff Report, Attachment I, Farhat letter dated June 15, 2008, at 1.

If the conservation easement is going to "fully offset" the Project's water use such that there can be no "fair argument" that the Project "may" have significant environmental impacts, *it must fully offset the Project's water use at each and every time of the year*. Whether or not the annual water use of a three-bedroom house is greater than the annual water use of a winery is beside the point. What *is* important is that, *each time* the winery draws water, an equivalent amount of water is *simultaneously* being forfeited at the 100 Wappo Road parcel. But this will not be the case with the proposed conservation easement, because household water use does not suffer from the same seasonal variability that winery water use does.

Even assuming that *annual* household water use *is* lower than *annual* winery water use, the difference in seasonal water use between the two will mean that the conservation easement, if approved, will have the effect of increasing the two parcels' water use in the late summer and early fall months, when winery use is highest and flows are lowest, and decreasing the two parcels' water use during other times of year, when water already flows through Mark West Creek.

Any even slight increase in the amount of water used by the two parcels during the dry season will have significant cumulative environmental impacts for all of the reasons discussed in our prior letters. *See* October 8, 2009 letter, at 4, 8-9, and citations therein; November 5, 2009 letter, at 7-8, 12-14, and citations therein. Therefore, the conservation easement will not mitigate the Project's water use; there exists "substantial evidence" that the Project's increased dry season water use "may" cause significant environmental impacts; and an EIR is accordingly required.

Similar objections are applicable to the new suggested condition of approval, which would require the Project proponent to install a rainwater harvesting system on his roof and parking lot. But rain does not typically fall during the dry season, and there is nothing in the Staff Report to indicate that the harvested rainwater would be used during the dry season. Nor is there any attempt to estimate how much water would be harvested with such a method; Mr. Bonds' estimates are based on a 10,000 square foot parking lot, but the Project only has 22 parking spaces. *Compare* Staff Report, Attachment C, DWR letter dated 12/21/2009, at 2 *with* Re-Circulated MND, at 1.

For all of the foregoing reasons, an EIR is required for the proposed Cornell Winery Project. Thank you for considering our views in this important matter.

Very truly yours,

STEPHAN C. VOLKER
Attorney for New-Old Ways
Wholistically Emerging

SCV:ym

Enclosures:

1. Items 1-31 of the *Sonoma County Groundwater Studies Checklist ("Checklist")*;

2. The County's *Procedure for Implementing General Plan Policy RC-3h* [currently Policy WR-2(e)] ("*Policy*");

3. PRMD publication number 9-2-28, *Well Pump Test Guidelines in Water Scarce Areas* ("*Guidelines*")

SONOMA COUNTY GROUNDWATER STUDIES CHECKLIST (DEC. 2003)

	Compliance With Guidelines	Yes	No
1.	Was the report was prepared by a Registered Geologist, Certified Engineering Geologist or Certified Hydrogeologist		
2.	Is the impact area identified in the report consistent with that mutually agreed on by the geologist, the REHS, and the Planner?		
3.	Are geologic formations correctly identified and delineated on a map?		
4.	Does the map have a scale and reference points?		
5.	Is the type of aquifer identified and described?		
6.	Is a geologic cross section included?		
7.	Are well depths in the area documented?		
8.	Is the yield of wells in the area known and well documented?		
9.	Was an effort made to learn of well failures or unsuccessful attempts to develop water in the impact area?		
10.	Is this effort well documented?		
11.	Were local property owners consulted?		
12.	Were well drillers contacted?		
13.	Is a water balance provided?		
14.	Is storage capacity calculated?		
15.	Is the water in storage calculated for the impact area?		
16.	Are the methods used described?		
17.	Are the calculations shown?		
18.	Does the report discuss current quantities and projected (cumulative) quantities of groundwater pumped?		
19.	Have other RC-3h reports been conducted in the area?		
20.	Is this report consistent with those reports?		
21.	Does the report discuss impacts to surface waters and aquatic habitat?		

	The report indicates that:	
22.	The size of the cumulative impact area (acres)	
23.	The size of the project property (acres)	
24.	Proposed annual use (acre-feet)	
25.	Depth of proposed well (Feet)	
26.	Estimated annual use by others in the cumulative impact area (acre-feet)	
27.	Number of active wells in the cumulative impact area	
28.	Average depth of wells in cumulative impact area (feet)	
29.	Average distance to nearest well (feet)	
30.	(P) Average annual rain fall (tenths of a foot):	
31.	(ETo) is lost to evapotransporation (tenths of a foot):	
	(Qout) % runs off:	

PROCEDURE FOR IMPLEMENTING GENERAL PLAN POLICY RC-3h

Policy RC-3h:

Require proof of adequate groundwater in Class III and IV water areas. Require test wells or the establishment of community water systems in Class IV water areas. Test wells may be required in Class III water areas. Deny discretionary applications unless a geologic report establishes that groundwater supplies are adequate and will not be adversely impacted by the cumulative amount of additional development. (page 217, Sonoma County General Plan)

Implementation Procedure:

1. This procedure applies to **discretionary** (e.g., subdivisions, use permits) and **not to ministerial** (e.g., building permits, septic system permits) projects.

2. The official maps for determining whether a site is in a Class I, II, III, or IV groundwater availability area are those in the General Plan Resource Conservation Element.

3. The requirements of the fourth sentence in RC-3h are: 1) adequate on-site groundwater supplies must be available for a proposed use, and, 2) the current and future usage of groundwater supplies in the project area will not likely affect or be affected by the project.

4. Evidence that the requirements of #2 above have been met must be provided to the decision-making body **prior to** its discretionary decision. To meet this requirement, a geologic report (see 6c. below) shall be prepared prior to the public hearing on the project. Test wells may be a **condition** of project approval in Class III water availability areas if there are substantial questions as to the availability of groundwater by the geologist's report. Test wells are required in Zone IV water areas by Sections 7-12 and 25-179 of the Sonoma County Code.

5. The determination whether or not cumulative impacts have been adequately addressed in the geologic report will be based upon joint review by the Registered Environmental Health Specialist (REHS) who responds to the project referral and the Planner, as part of preparing the project's Initial Study. If cumulative impacts of the mutually agreed upon impact area (see 6c.2) below) are not adequately addressed, the project would be inconsistent with the General Plan.

6. The procedure which is to be utilized for discretionary projects is similar to the Expanded Initial Study process presently in use for addressing geologic, noise, archaeology and other technical issues. This procedure is as follows:

    a. Initial Study will identify whether the project site is in a Class III or IV area;

    b. In most cases, the REHS referral will review the need for preparation of a geologic report to provide the information necessary to determine that there are adequate existing and future groundwater supplies both on-site and in the impact area. In some cases, staff may be able to make these findings using existing data on file, in which case a new geologic report will not be necessary;

c. The geologic report will meet the following guidelines:

1) The geologic report must be prepared by a registered geologist, a certified engineering geologist, or a certified hydrogeologist with expertise in groundwater geology;
2) The geologist preparing the geologic report will identify a cumulative impact area mutually agreed upon through reliance on his or her own expertise and on consultation with the REHS and the project Planner;
3) The report must identify and assess the geologic formations within the impact area;
4) The report must discuss the known well depth and yields and discuss any history of known well failures or unsuccessful attempts to develop water in the impact area;
5) The report must thoroughly reveal the level of effort expended in identifying existing and abandoned wells within the impact area. This may include review of records, interviews with well drillers and interviews with impact area property owners;
6) The report must discuss and project the continued availability of groundwater, including comments on recharge balance/rate and storage capacity within the impact area during drought conditions;
7) The report must come to a conclusion that is clearly stated in the report as to the on-site water availability and the effects of drawdown on surrounding water availability.

d. If a geologic report is also required to address other issues (e.g., soil stability and stability of septic system areas), the applicant may wish to combine the studies into a single report.

e. In general, the type of development which will be considered in the cumulative scenario will be residential, commercial, industrial and similar development. The Planner will provide the likely future development scenario within the impact area, based upon General Plan residential densities, zoning designations, existing uses and reasonably foreseeable projects. Agricultural water needs would also be considered where agricultural uses are present in the subject area. Water needs for fishery and wildlife habitat are generally not relevant to this portion of the Initial Study. The latter are instead addressed under plant and/or animal impacts rather than under water supply impacts.

Permit and Resource Management Department
POLICY AND PROCEDURE **Number 9-2-28**

Well Pump Test Guidelines in Water Scarce Areas

PURPOSE

These Guidelines will apply to well pump tests performed for the purpose of demonstrating compliance with minimum water quantity requirements of the Sonoma County Code for residential construction in water scarce areas or second dwelling units in marginal water availability areas of Sonoma County.

GENERAL

Pump tests conducted on or after the effective date of this policy will remain valid for a period of 3 years or as long as aquifer conditions remain substantially the same as established by a Registered Geologist or Registered Civil Engineer. [Grandfather clause: Pump tests accepted by the County prior to this Policy's initial implementation date of 06-08-04 will remain valid for 3 years from the date of the test.]

AUTHORITY

Sections 7-12, 25-17, 25-56 and 26-88-060H of the Sonoma County Code.

DEFINITIONS

"Discharge rate" means the rate at which the well discharges water (usually expressed in gallons per minute).
"Draw down" means the difference measured in feet between the static and dynamic water levels.
"Dynamic water level or stabilized pumping level" means the level of water in the well during the pump test.
"Post-test static water level" means the level of water seventy-two hours after the pump test.
"Recovery" means the difference in feet between the post test static water level and the pumping level (dynamic water level)
"Specific capacity" means the discharge rate divided by the draw down (usually expressed as gallons per minute per foot of draw down).
"Static water level" means the level of water in the well before the pump test.

PROCEDURE

A. Pump Test Requirements

1. General Conditions

   The Sonoma County Code requires demonstration of at least one gallon per minute per dwelling unit for new or replacement dwellings located in water scarce areas and for second dwelling units in marginal water availability areas. The code specifies a sustained

yield, metered pump test from a well or wells for a specified time period of 8-12 hours for water systems with 1-2 connections, 16-24 hours for water systems with 3-4 connections and 72 hours for systems with 5 or more connections. The 72 hour test may be modified by the administrative authority but in no case shall be less than 48 hours. Note: Also refer to Section 64563 of the California Code of Regulations for systems with 5 or more connections.

Testing to meet the above yield requirements shall be conducted from July 15 to October 1 each year or as extended by the Project Review and Advisory Committee. This time period is referred to as the dry weather pump test period. The Permit and Resource Management Department shall be notified 24 hours in advance of any testing. Pump tests may be performed by or under the direction of a licensed drilling contractor (C57), pumping contractor (C61/D21), a Registered Civil Engineer or a Registered Geologist.

2. A copy of the previously completed State of California Department of Water Resources Well Completion Report, if available, shall be submitted with the completed Permit and Resource Management Department's form, Certification of Water Yield in Water Scarce Areas - WLS-010.

3. If multiple wells are being used to meet the minimum water production requirements, then all wells must be pumped simultaneously.

B. Pre-Test Requirements

1. Identify the location of the well, by either the NAD83 California State Plane II or WGS 84 lat./long. or by the measured distance reference to a fixed landmark. Record this information on the WLS-010 form. Include the estimated elevation of the well head.

2. Measure and record the static (non-pumping) water level in the well. If well is operational, so note on the WLS-010 form. Provide information on measuring points (top of casing, surface seal, access port, etc.) Measurements should be taken relative to ground level. The measuring point above ground level should be measured and noted on the WLS-010 form. In order to establish the static level, the well must not be pumped for at least 12 hours prior to measurement of the static water level.

3. Record the type of discharge measurement method. Indicate the type and model of flow meter or provide an accurate description of weir or orifice plate set up.

C. Twelve-Hour Pump Test Method

1. Record the static level.

2. Calculate the volume of water stored in the well.

3. Remove a volume of water equivalent to the calculated volume stored in the well.

4. Select a dynamic water level for the test. Lower the water level to the selected dynamic water level as quickly as possible. Maintain the dynamic water level for the duration of the test by adjusting the discharge rate. Pump at a rate of no less than one gallon per minute and continue pumping for twelve hours.

5. If it is not feasible to use a water level sensing device (probe), a stable pumping rate must be maintained for a period of 3 hours prior to the start of the sustained yield test. This condition may require pulling the pump to determine the static water level prior to conducting the test, reinstalling the pump to conduct the test, and pulling the pump again to read the 72 hour recovery.

6. If a low water yield pump protector device is used and the dynamic water level is not established above the pump setting, the dynamic water level will be assumed to be at the pump.

7. Record the dynamic water level and discharge rate according to the following schedule:

Time since pumping began (including pumping to remove stored volume)	**Time Interval**
0-5 minutes	1 minute
5-60 minutes	5 minutes
60-100 minutes	20 minutes
100 minutes to establish the dynamic water level	30 minutes

Once the stabilized dynamic water level has been reached for a minimum period of 3 hours, the water level must be read a minimum of every 12 hours to the end of the test.

8. At the end of the pumping test, measure, and record the final discharge rate and dynamic water level.

D. Alternative Eight-Hour Pump Test Method

1. An alternative eight-hour pump test method can be used instead of the twelve-hour pump test method for systems of 1 or 2 connections if, after 4 hours of pumping, the specific capacity is greater than 0.05. While conducting the alternative eight-hour pump test the dynamic water level and discharge rate are to be recorded in accordance with the time intervals specified in Section C above.

E. Alternative Sixteen-Hour Pump Test Method

1. An alternative sixteen-hour pump test method can be used instead of the twenty-four hour

pump test method for systems of 3 or 4 connections if, after 4 hours of pumping, the specific capacity is greater than 0.05. While conducting the alternative sixteen-hour pump test the dynamic water level and discharge rate are to be recorded in accordance with the time intervals specified in Section C above.

F. Post Test Measurement

1. Measure and record the static level in the well seventy-two (72) hours after the final dynamic water level measurement.

G. Calculate the Well Recovery

1. Determine the water level draw down by subtracting the initial static water level measurement from the stabilized dynamic pumping level. Record this result as the well draw down.

2. Next determine the water level recovery by subtracting the post test (72 hour) static water level from the stabilized dynamic pumping level. Record this result as the well recovery.

3. Next determine the percent recovery of the well. Divide the water level recovery by the water level draw down and multiply by 100. Record this result as the percent well recovery.

   Example:

   a. Initial static water level:_____(Measured value)

   b. *Post test static water level:_____(Measured value)

   c. **Stabilized Pumping level:_____(Measured value)

   d. Draw down:_____(Calculate by subtracting A from C)

   e. Recovery:_____(Calculate by subtracting B from C)

   f. Percent recovery:_____(Calculate by dividing E by D and multiplying the results by 100)

   Well percent recovery (F) must be 90% or greater within a 72 hour period.

* The static water level after 72 hours or less post pump test.
** Kleinfelder refers to this as the dynamic pumping level.

ATTACHMENTS

None

Approved by:

/s/ Pete Parkinson

Pete Parkinson, Director

Lead Author: Kleinfelder Associates

Revisions:
06-08-04 03/25/05
07-13-04
09-02-04

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September 21, 2010

VIA EMAIL, FACSIMILE, AND U.S. MAIL

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Valerie Brown, Member
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Re: Henry Cornell Winery Project, 245 Wappo Road

Dear Supervisors and Board of Zoning Adjustments:

On behalf of New-Old Ways Wholistically Emerging ("NOWWE"), we respectfully submit the following comments on the August 2010 proposed Mitigated Negative Declaration ("MND") and Staff Report in connection with the proposed Henry Cornell Winery Project ("Project") at 245 Wappo Road, Santa Rosa. This letter incorporates by reference the letters and exhibits submitted by NOWWE on October 8, 2009, November 5, 2009, November 11, 2009, and February 24, 2010. Please include this letter in the public record on this matter.

I. INTRODUCTION

The applicant is proposing to develop a winery in the immediate vicinity of Mark West Creek, which supports an extremely sensitive ecosystem and in recent years has suffered chronic siltation and low flow due to deforestation and improvident development of its upper watershed. The "high quality" "[n]ative habitat" present on the Project site "is increasingly rare in Sonoma County." Prunuske Chatham, Inc., "Biological Resources Assessment," dated July 2010 ("PCI Report"), at 2. An EIR is required for this Project.

In previous comment letters, NOWWE documented the extensive case law demonstrating the "low threshold requirement for the preparation of an EIR." *Citizen Action to Serve All Students v. Thornley* (1990) 222 Cal.App.3d 748, 754. "[T]he preparation of an EIR" is required "whenever it can be *fairly argued* on the basis of substantial evidence that the project *may* have significant environmental impact." *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75. "If there [i]s substantial evidence that the proposed project *might* have a significant environmental impact, *evidence to the contrary is not sufficient to support a decision to dispense with preparation of an EIR* and adopt a negative declaration, because it could be 'fairly argued' that the project might have a significant environmental impact." *Friends of 'B' Street v. City of Hayward* (1980) 106 Cal.App.3d 988, 1002 (emphasis added). In other words, "if there is disagreement among expert opinion supported by facts over the significance of an effect on the environment, the Lead Agency shall treat the effect as significant and shall prepare an EIR." CEQA Guidelines [14 C.C.R.; "Guidelines"] § 15064(g).

Contrary to this settled law, the BZA staff proposes use of a Mitigated Negative Declaration ("MND") rather than the EIR required by CEQA. As detailed below, ample evidence exists that "the proposed project might have a significant environmental impact." *Friends of 'B' Street, supra,* 106 Cal.App.3d at 1002. Accordingly, an EIR must be prepared.

Overall, the Staff Report and MND are flawed by four significant shortcomings. First, they overlook the proposed site's significant geotechnical hazards. Second, they fail to acknowledge the Project's potential biological impacts. Third, they overlook the Project's potentially significant hydrologic impacts. Fourth, the MND unlawfully defers the formulation of Project mitigation measures, precluding public comment thereon. These omissions give rise to a "fair[] argu[ment]" that the Project "may have significant environmental impact." *No Oil, supra,* 13 Cal.3d at 75. An EIR is therefore required.

II. THE PROPOSED SITE IS GEOTECHNICALLY UNSAFE.

The proposed site of the Project has not been demonstrated to be geotechnically feasible. Although "the headscarp of [a] landslide . . . encroaches" upon "the proposed building site," detailed geologic mapping of the proposed site was never conducted. Raymond Waldbaum, Geologic Review of Supplemental RGH Geologic Report in Response to Cotton-Shires Review ("Waldbaum Review"), at 6. The MND's underlying reports[1] ignore these informational deficiencies. The MND glosses over these problems completely. There are at least eight deficiencies with the geotechnical analysis performed of the Project, which we discuss below. These deficiencies in the face of this Project's potentially significant impacts render an EIR necessary.

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1 The MND's geotechnical conclusions are based upon a June 23, 2010 report by RGH Consultants, Inc. ("RGH"), and a July 2, 2010 so-called peer review of RGH's report by Cotton, Shires, and Associates ("CSA").

A. *"Large, Dangerous Landslides"*[2] *Are Present On-Site.*

As discussed by expert geologist Raymond Waldbaum, Plate 2 of RGH's June 23, 2010 report clearly shows "that landslides are present in the slopes descending northwesterly and southeasterly from the proposed Wine Factory site." Waldbaum Review, at 4. The locations of these "landslide scarps and landslide masses" are designated by RGH as "approximate" because detailed subsurface investigation has not occurred. *Id.* The inadequate investigation that has been done reveals hazards that clearly demonstrate the need for further review in an EIR.

For example, RGH Plate 2 indicates the presence of "a landslide whose headscarp coincides with the ridge line where the Wine Factory is proposed for construction." Waldbaum Review, at 4. Yet RGH "derives the incredible finding that the ridge line is stable!" *Id.* Either "the map is accurate [and] the ridge is not stable [or] the ridge is stable [and] the map is not accurate. *This contradiction must be resolved.*" *Id.* (emphasis supplied).

RGH's report also "casually disregard[s]" the potential for these landslides that "flank[]" the Project to "enlarge[e] . . . in an upslope direction," thereby "consum[ing] the proposed building site itself[.]" *Id.* at 7. This common process is called "headward enlargement." *Id.* This potentially significant impact cannot be overlooked.

RGH's report is also inadequate because it fails to include any large-diameter borings. *Id.* at 2. Large-diameter borings are needed because the small-diameter core boring logs for the site reveal that the soils "excavated in the *immediate vicinity of*" the Project site contain "materials that either *are* landslide debris or materials that are *indistinguishable from* landslide debris." *Id.* at 5 (emphasis supplied). Indeed, the core samples were "so weak that they could not even be placed into . . . boxes without disintegrating." *Id.* "High strength, intact bedrock was **not** encountered in the borings." *Id.* (emphasis supplied).

The MND completely ignores these geotechnical problems. The discussion of landslide risks does not mention any on-site landslides. *See* MND at 20, 21. Because the Project potentially will cause a significant environmental impact due to its geotechnical instability, an EIR is required. CEQA Guidelines [14 C.C.R.] § 15064(g).

B. *RGH'S Stability Assessment is Inaccurate; the Project Site is Unstable.*

RGH's finding that the materials in the core borings possess a high factor of safety against landsliding cannot be reconciled with the evidence, discussed above, demonstrating the presence of landslides on-site. Waldbaum Review, at 4-5. "Stable sites simply are not covered with large landslides, and sites that are covered with large landslides simply are not stable." *Id.* at 5. Despite this evidence of instability, RGH "has thus far failed to perform" a "fundamental feasibility analysis in accordance with the investigative procedures specified by [CSA] in its . . .

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2 Waldbaum Review at 3 (capitalization altered).

review and in CGS Special Publication 117A." *Id; see also* CSA July 2, 2010 peer review, at 2 ("comprehensive quantitative slope stability analyses are not necessary").

C. *The MND Overlooks the Site's Potential Seismic Risks.*

The MND concludes that, with mitigation incorporated, the Project will not "expose people or structure to potential substantial adverse effects, including the risk of loss, injury, or death, involving [¶¶] [s]trong seismic ground shaking." This conclusion is directly contradicted by evidence in the record. RGH itself states, on page 10 of its June 2010 report, that "strong ground shaking [is] predicted to impact the site during the life of the [P]roject." The Project site "is within an area affected by strong seismic activity." *Id.* at 8. RGH's conclusions that the site is unlikely to be affected by *surface fault rupture* because the Project site is not *on top of* a known earthquake fault do not and cannot support a conclusion that the site is unlikely to be affected by *strong seismic ground shaking* from a *nearby* fault. RGH report, at 8; *cf.* MND at 21 (referring reader to discussion of fault rupture risks for assessment of risks due to strong seismic ground *shaking*, yet no discussion of the latter appears with the former). Because of this potentially significant impact, an EIR must be prepared.

D. *The Project Site Does Not Have "Favorable Ground Stability" or a "Low Potential For Seismic Hazards"; Comprehensive Quantitative Slope Stability Analyses Are Thus Required, Contrary to CSA's Conclusions.*

CSA concludes that additional studies of the stability of the Project site are unwarranted because the Project site has already been shown to be stable. As discussed above, there is no evidence to support such a conclusion of stability. All of the (insufficient) data that has been collected illustrates that the site is *not* stable and is instead underlain by landslides. Moreover, the site is likely to be strongly affected by groundshaking in the probable event of a future earthquake. California Geological Survey ("CGS") Special Publication 117A directs that "[s]lope stability analysis will generally be required for . . . slopes that, like this one, possess unusual geologic conditions such as . . . evidence of prior landslide activity." Waldbaum Review, at 6. Mr. Waldbaum *has never before encountered a site more clearly matching the "evidence of prior landslide activity" criterion* in Special Publication 117A than the Project site *in his entire 41 year career*. Waldbaum Review at 6 (emphasis added).

Nonetheless, CSA erroneously concluded that this essential stability analysis was unnecessary. Because the Project site is underlain with landslides and is predicted to be impacted by strong seismic ground shaking during the Project's life, additional stability analyses are required by CGS Special Publication 117A.

Furthermore, to the extent that CSA's conclusion is based upon CSA's "own site geologic mapping," this is improper. CSA Peer Review, at 2. CSA's "own . . . mapping" is not available for public review. Mr. Waldbaum was informed by this Project's County Planner that "there is

no" such "geologic map." Waldbaum Review, at 6. If it exists, this map must be made available for expert assessment and public review. Otherwise, it may not be used by County staff.

III. THE MND IGNORES THE PROJECT'S BIOLOGICAL IMPACTS.

The MND's analysis of the Project's biological impacts is deficient, for four reasons. First, the biological inventories that were conducted are inadequate and no follow-up tests are planned. Second, the MND fails to mitigate the Project's impacts upon a special-status plant species known to exist on-site. Third, as discussed *infra* (in section V), the MND unlawfully defers the formulation of biological resources mitigation measures. Fourth, as also discussed *infra* (in section IV), the Project will impact special-status fish species by increasing the amount of water drawn from nearby streams, and will impact special status animals by increasing runoff to potential habitat.

A. *Additional Biological Resource Inventories Must be Conducted Before Project Approval.*

Despite the fact that numerous special-status plant and animal species are potentially present on-site or nearby, and notwithstanding an express recommendation in the Project's Biological Resource Assessment that additional detailed biological surveys be conducted, the MND fails to include or require these necessary inventories. *See* MND at 13-17 (failing to require additional inventories); *cf.* PCI Report at 19 (recommending follow-up surveys because field surveys "occurred outside the reported blooming period for a number of" "special status plant species"). *See also* Report of Peter Baye, Ph.D., at 2-3, 8-9 (detailing shortcomings in PCI Report and recommending further studies).

PCI reported that two special status plant species have "moderate" potential to occur on-site, and stated that "[a]dditional surveys" were "recommended." PCI Report at 7, 9. These additional surveys were recommended because PCI's inventory "occurred outside the reported blooming period" for many plant species. The MND fails to implement PCI's recommendation for "follow-up 2011 spring survey(s)." Instead of approving the Project and hoping that no special-status plant species are inadvertently taken, the County must require additional biological surveys to determine the presence of these species *before approving the Project*. There is no basis for the MND's conclusion that there *can be no possible* biological resources impacts *because it is unknown to what extent special-status plants exist on-site.* On-site biological resource surveys are also necessary because some of PCI's conclusions that various rare plants are unlikely to occur on-site appear implausible. *See* Report of Peter Baye, Ph.D., at 5-6. Early spring, late spring, and late summer surveys must be conducted. *Id.* at 8. These studies must account for the potential presence of "dormant seed banks" that may contain otherwise-absent species. *Id.* at 4,6. (Dormant seeds exist due to the result of the area's fire history. *Id.*)

PCI's Assessment is also inadequate because it failed to acknowledge the fact that the North Fork of Mark West Creek supports downstream aquatic habitat, and because PCI ignores

the documented presence of steelhead in the North Fork of Mark West Creek. *See* August 31, 2010, Report of Stacy K. Li, Ph.D., at 1. PCI also failed to adequately assess the presence of owl populations likely to be significantly impacted by the Project. Report of Peter Baye at 2, 5.

The MND fails to include or require adequate surveys for the California red-legged frog, a federally Threatened species, and the northwestern pond turtle, a California Species of Special Concern. Both have "moderate" potential to exist in the freshwater pond at 100 Wappo Road, "detailed surveys would be needed to determine species presence." PCI Report, at 14. Instead of requiring such "detailed" surveys, however, the MND instead proposes a *one-day* "preconstruction survey" *on the site.* This truncated on-site survey will not cover the *adjacent* parcel. Moreover, this one-day review would not constitute a "detailed" survey capable of accurately determining the presence of special-status species. As discussed below, Project construction will change the drainage of the site such that a portion of the Project's runoff flows into this freshwater pond, with attendant impacts on the species living there. Because there is a "potential substantial impact on . . . [a] threatened species," this impact "is *per se* significant" and prevents the use of an MND. *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449 (citing CEQA Guidelines § 15065(a)(1)). The County must prepare an EIR.

The proposed bat mitigation (MND at 16) "is biologically unsound and unreasonable." Report of Peter Baye, Ph.D., at 5. The proposed mitigation, which consists of "destroying rare bat habitat . . . when [bats] are temporarily not physically occupying" it, is "unsupported by any conservation biology or wildlife management principles." *Id.* at 5, 8. This mitigation "would ensure significant net loss of scarce habitat structure as well as a high risk of mortality." *Id.* at 5. Such impacts require the preparation of an EIR.

B. *The MND Fails to Mitigate the Impacts on Those Special-Status Species Known to Exist On-Site.*

There are at least two special-status species known to exist on-site or nearby: a rare plant, the narrow-anthered California brodiaea,[3] and certain "birds protected under the Migratory Bird Treaty Act and California Fish and Game Code." PCI Report at 7, 16, 19. Impacts to these species are *not* mitigated in the MND.

For example, the MND states that "*[w]here impacts*" to the brodiaea "*are unavoidable*," certain vaguely defined mitigation measures are to be implemented. MND at 15. **The fact that the MND acknowledges that the Project may have "unavoidable" impacts to a special-status plant species itself indicates that an EIR is required**. *Id.* Furthermore, many of the proposed mitigation measures, including translocation and compensatory habitat creation, are very likely to be infeasible. *See* Report of Peter Baye, at 1. Indeed, the brodiaea mitigation's

3 This plant is listed on the California Native Plant Society's List 1, and is thus a "special-status species" pursuant to Guidelines § 15380. *See* PCI Report at 6.

"feasibility . . . is . . . extremely doubtful for any meaningful long-term biological conservation objectives." Report of Peter Baye at 8. Moreover, neither the MND nor the PCI Report adequately assess or mitigate the Project's impacts relating to invasive species. Report of Peter Baye at 4.

With regard to birds, PCI unequivocally recommended that "construction activities should occur outside" the period from "March 15 to August 15," which is "the critical breeding period" of these avian species. PCI Report at 21. Vegetation removal should also not occur between these dates. *Id.* The MND fails to implement these recommendations as an enforceable mitigation measure. The MND states, "If construction commences after March 15th, the work area should be surveyed by a qualified biologist. . . ." MND at 16. The MND must require that *all* work be conducted *outside* of these dates instead of *specifically contemplating* that construction work will occur *during* the "critical breeding period" of important migratory birds. *Id.* Otherwise, it cannot be said with certainty that the MND will mitigate the Project's impacts "to a point where *clearly no significant effects on the environment would occur*." Guidelines § 15369.5.

IV. THE MND FAILS TO ADEQUATELY ADDRESS THE PROJECT'S HYDROLOGICAL IMPACTS.

There are seven overarching deficiencies in the MND's assessment of the Project's hydrological impacts. First, the MND fails to account for the *vineyard's* water use. Second, the plans for the water storage tanks intended to compensate for the *Project's* water use are insufficiently well developed to demonstrate that they will actually mitigate this usage. Third, the MND overlooks the additional runoff that will be created by the Project and instead relies upon undeveloped plans to mitigate these impacts. The additional runoff could have substantial negative effects on special-status animals and rare plants. Fourth, the leach field planned to accommodate the Project's domestic wastewater may cause a variety of significant environmental impacts. Fifth, the MND leaves unanswered a number of critical questions regarding the Project's process wastewater disposal. Sixth, the relationship between Project groundwater pumping and nearby surface flows has been misstated. Seventh, and finally, the County's Groundwater Checklist has not been complied with. Because of these significant deficiencies, an EIR is required.

A. *The "Project" Includes Vineyard Water Use.*

The MND continues to omit the water use of the vineyard when calculating the Project's water use. *See, e.g.*, MND at 26 ("'Project' water usage does not include the 3.69 AFY for the vineyard"). Such an improper segmentation of the Project is not permitted by CEQA. "'Project' means the whole of an action" that "has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect change in the environment. . . ." Guidelines § 15378(a). Here, there are three reasons why the vineyard must be included in the Project's water use.

First, as discussed in NOWWE's November 5, 2009, comment letter, the "Project" includes the vineyard because it is unlikely that the winery would be constructed but for the adjacent vineyard. The MND concludes that the Project will not be inconsistent with the Sonoma County General Plan *because the wine produced onsite will be produced from grapes from the adjacent vineyard.* MND at 30. Permitting the winery without the vineyard would violate Sonoma County's General Plan. Because the winery cannot be approved but for the vineyard, the two activities are part of the same "Project."

Second, the "Project" includes the vineyard because the winery's process wastewater will be disposed of in the vineyard. *See, e.g.,* Dennis Jackson Hydrology report dated September 16, 2010 ("Jackson Report"), at 5. By using the vineyard as the Project waste disposal system, the vineyard is incorporated into the Project.

Third, the vineyard is part of the Project because the Project applicant had planned to construct a winery since at least 2002, before the vineyard was created. *See* Exhibit 1 to February 24, 2010 NOWWE letter. Because the winery was planned to be part of the vineyard project all along, both actions are part of a single "Project" for the purposes of CEQA.

B. *The Rainfall Storage Tank Plans Lack Necessary Detail.*

The applicant now plans to use two sets of storage tanks in an attempt to mitigate the Project's water use. The applicant will harvest rainwater from the winery's roof for use in landscape irrigation through the construction of storage tanks of *either* 6,000 or 140,000 gallon capacity. *See* MND at 2 (invoking "two rainwater storage tanks with a total 140,000 gallon capacity"); *cf.* Atterbury & Associates, Inc. June 3, 2010, "Summary of Proposed Water Use and Mitigation" ("Atterbury Report"), at 3 (a "6,000 underground rainwater harvest vessel is proposed to trap roof runoff for beneficial use as landscape irrigation"); *see also* Jackson Report at 6 (detailing inconsistencies between the two). As illustrated by this dramatic inconsistency in the reported size of the storage system, these plans lack necessary detail and, as a result, (1) it is unclear whether water use will actually be mitigated; and (2) additional environmental impacts may result from the storage system. There are at least four uncorrected problems with the proposed rainwater harvesting system.

1. <u>The Amount of Water Needed for Landscaping is Undisclosed.</u>

First, although the rainfall capture system is designed to satisfy the Project's irrigation water demand, the "total landscape water demand is not mentioned" in either the MND or the preliminary landscaping plans, so it is impossible to know whether these water needs can be satisfied through the harvesting system. Jackson Report at 8. Nor are the Project's landscaping water needs included in the Atterbury Report. Atterbury Report at 3-4. This critical information must be provided in the required EIR.

2. The Maximum "Intensity" of Rainfall that the Capture System Can Manage is Unknown.

Second, because "the rainwater harvesting system has not been designed yet," the amount of water that the capture system can handle at once (known as the maximum "intensity" the system can manage) is similarly undisclosed. Jackson Report, at 7-8. If a large volume of rain falls in a short period of time, the system would likely be overwhelmed. As such, whether the rainfall capture system can meaningfully contribute to a reduction in runoff is unknown. *See id.* at 10-11.

3. The MND Does Not Disclose the Source of Landscaping Water in Dry Years.

Third, assuming that the capacity of the harvesting system is indeed 140,000 gallons, it will take 33.52 inches of rain to fill the harvesting system to capacity. *Id.* at 7. The MND does not discuss how the Project's landscaping water needs will be satisfied in a year with less than 33.52 inches of rain. In some dry years past, recorded rainfall has been only 17.98 inches. Jackson Report at 7. Moreover, such dry years are likely to coincide with a longer "irrigation season" and a higher "total irrigation water demand." *Id.* Will additional groundwater be pumped to satisfy these landscaping needs? The Project's total water use, including landscaping, must be disclosed, and the sources of such water determined.

4. Seasonal Variability of Rainfall Must be Accounted for in Any Estimate.

Finally, this estimate of the Project's landscaping water use must account for the seasonal variability of rainfall. For example, a warm dry Spring would "lead[] to a longer irrigation season . . . resulting in greater total water use." Such contingencies must be accounted for.

C. *The Runoff Generated By the Project Will Have Significant Environmental Impacts.*

The MND glosses over key environmental impacts from storm runoff, coming to the unwarranted conclusion that "[c]onstruction of the project will not substantially alter the existing drainage pattern on the site" and that runoff impacts will be "reduce[d] . . . to a less than significant level" through the imposition of undisclosed mitigation measures. MND at 29. This conclusion is unsupported for three main reasons.

1. No Effort is Made to Quantify the Project's Runoff.

There has been no effort to quantify the amount of additional runoff that the Project will generate. "[N]o estimates of the increase in peak storm runoff from the winery have been made[.]" Jackson Report at 9. "There is no engineering study to determine what the changes in peak stormwater discharge would be for various durations and return-period storm events." *Id.* at

10. Accordingly, "there is no basis for" the MND's "finding of 'Less than Significant Impact.'" *Id.* at 8. Such a report must be conducted and included in an EIR.

2. The Project Will Substantially Alter the Drainage Pattern of the Site.

The Project will substantially "shift the run-off from the site." MND at 29. "Instead of draining by gravity to . . . the un-named tributary of the North Fork of Mark West Creek, water would instead tend to flow . . . onto Wappo Road itself or into . . . the pond on the adjacent parcel." MND at 29. There is no basis for the MND's conclusion that such a re-routing of runoff will have no significant environmental impacts. The MND simply ignores or glosses over the key environmental impacts that these new runoff courses pose.

Modifying the drainage pattern of the site such that a significant portion of the Project's runoff would flow into the freshwater pond at 100 Wappo Road has the potential to cause a number of significant environmental impacts. Yet "[t]he MND has not evaluated the impact of routing stormwater runoff from the Cornell Winery through the pond." Jackson Report at 10. This runoff "will carry pollutants, such as oil and grease from vehicles, from Wappo Road and from the winery production area into the pond." As discussed above, this pond has a moderate potential to be habitat for special-status animal species. But the impacts of this additional runoff on these species were not ascertained. *See* also Report of Peter Baye, at 7 (detailing unmitigated impacts to the California red-legged frog). Nor is it even known "whether the pond is capable of handling additional stormwater runoff. . . . The MND has not examined the safety of routing increased storm flow through the pond." *Id.* at 10. The runoff created by the Project is likely to be laden with silt due to the easily eroded soils in the Project vicinity, exacerbating these environmental impacts. *Id.* at 9-10. Since these erosion impacts may be significant, an EIR is required.

The MND also ignores the potentially significant environmental impacts that will result from rerouting drainage onto Wappo Road itself. It is unknown what will happen to this runoff once it is diverted onto Wappo Road. Additional runoff will be generated by the paving of Wappo Road. *Id.* at 9. The MND does not specify "[h]ow . . . th[is] combined storm runoff" will "be guided to a natural drainage channel." *Id.* It is possible that the "volume" of "stormwater runoff discharged from the paved portion of Wappo Road" will "be of sufficient magnitude to erode the bed or banks of the stream channel below the Cornell Winery Project[.]" *Id.* Since these erosion impacts may be significant, an EIR is required.

The erosion control plans themselves are inadequate. Such plans are particularly necessary because many nearby stream channels cross easily eroded soils. *See* Jackson Report at 9-10. Yet the erosion control plans "will not reduce the magnitude of the storm runoff sufficiently to prevent erosion of the bed and banks of streams between the winery and Mark West Creek." *Id.* at 10. Nor do the erosion control plans cover the site of the pond at 100 Wappo Road, where most of the additional runoff will flow. *Id.* As such, "the stream channel on 100

Wappo Road below the proposed winery will be eroded by the increased stormwater discharge from the winery." *Id.*

While the MND relies upon the rainwater harvesting system to reduce runoff and erosion (MND at 29), for the reasons discussed *supra* the efficacy of this system has not been demonstrated, and the Project's erosion impacts have not been adequately addressed. Because these erosion impacts may be significant, an EIR is required.

D. *The Leach Field for Domestic Wastewater Is Improperly Sited.*

The leach field for the disposal of domestic wastewater, although re-sited since the last time this Project was before the Board, has been moved to an inappropriate location and, as such, has the potential to cause significant environmental impacts. The deficiencies with the relocated leach field fall into four areas.

1. The Leach Field Site May Be Geotechnically Unstable.

"[T]he potential impact of water discharged from the leach field on the stability of the slopes below the leach field has not been assessed." Jackson Report at 12. These slopes are very steep; water from the leach field has "the potential for . . . contributing to either a landslide or debris flow." *Id.* In addition to being steep, the soils below the leach field are of an unstable, "eroded nature," further amplifying the potential for the leach field to trigger a landslide or debris flow. *Id.* Any such ground failure "would adversely impact water quality and fish habitat. Neither the geotechnical reports nor the MND have assessed this potential impact." *Id.* Furthermore, the "proximity of bedrock to the soil surface" makes the proposed leach field site "unsuitable for septic systems." *Id.* These potentially significant impacts require preparation of an EIR.

2. The 3,000 Foot Pipeline Associated With the Leachfield Has the Potential to Cause Significant Environmental Impacts.

"The pipeline connecting the wastewater treatment system to the leach field would be placed in Wappo Road and is about 3,000 feet long. The MND has not assessed the environmental impacts of constructing the wastewater disposal pipeline in the road." *Id.* For example, it is unknown how deep the pipeline will need to be buried to prevent it from being damaged from truck traffic on Wappo Road. *Id.* It is quite likely that the pipeline will need to be placed in bedrock, which will necessitate both exporting the excavated material and importing back-fill material. The associated truck traffic was not calculated or included in the MND. *Id.* at 12. Moreover, unless mitigation measures are implemented – and they were not in the MND – the back-filled material is likely to settle and capture runoff from the road surface. *Id.* at 13. This "will make a channel that will concentrate road runoff and erode the road surface," and will also "be a source of sediment to Mark West Creek and its tributary," both of which already suffer chronic problems from excess sedimentation. *Id.* at 13.

Furthermore, the pipeline will rise over 200 feet from the proposed winery site. *Id.* at 13. "there is no discussion in the MND regarding the potential impacts from the failure of the pump that would life the domestic wastewater up to the leach field. Sewage spills from failed pump lifts are common. Not only can pumps fail but electric pumps will not operate during power outages unless they are served by generators. The MND has failed to analyze the potential for water quality impacts associated with failure of the domestic wastewater lift pump." *Id.* A sewage spill due to a failed lift pump would have disastrous environmental consequences. This potentially significant impact requires preparation of an EIR.

Finally, neither the Grading Plan nor the Erosion Control Plan "address the construction of the wastewater disposal pipeline." *Id.* at 12. Measures to control the dust and erosion engendered by construction and operation of the pipeline must be developed and presented for public review in an EIR.

3. The MND Ignores the Biological Impacts of the Leach Field Site.

The MND contains contradictory information regarding the zoning of the 560 Wappo Road property, where the leach field is to be located. On the one hand, the MND reports that 560 Wappo Road is zoned "BR (Biotic Resources)." MND at 4. On the other hand, the MND unequivocally states that "the property at 560 Wappo Road does not have the BR (Biotic Resource) zoning designation." MND at 6. This inconsistency must be resolved in an EIR.

At any rate, no attempt was made to ascertain the biological impacts of the proposed leach field site. Jackson Report at 13. Neither the site nor the pipeline location was included in PCI's habitat inventory. It is likely that special-status plants are present at the proposed leach field site. *Id.* It is also unclear whether any land between Wappo Road and the leach field site will be disturbed by construction of the pipeline. *Id.* The biological impacts of the leach field and pipeline must be ascertained, and a site-specific habitat inventory conducted. Because these impacts may be significant, they must be addressed in an EIR.

4. The Potential Water Quality Impacts of the Leach Field Site Must Be Ascertained and Disclosed.

The MND lacks detail regarding the leach field's potential water quality impacts. As discussed above, a sewage spill is possible due to lift pump failure. Furthermore, well 56397 appears to be located near the leach field site. *Id.* "The MND does not indicate how far away from the site of the proposed leach field well 56397 is or whether it is down gradient from the proposed leach field. The MND must evaluate whether there is any chance that well 56397 might draw leach effluent towards it." *Id.* Because contamination of well 56397 is a potentially significant impact, an EIR is required.

E. *The System for Disposal of Process Wastewater is Underdeveloped.*

"[P]rocess 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." MND at 2.[4] This new method of disposing of process wastewater has the potential to cause a variety of significant environmental impacts that are ignored by the MND, requiring preparation of an EIR..

The vineyards are at a higher elevation than the winery. As with the domestic wastewater system discussed above, uphill pumping will be required. Therefore the possibility of pump failure, including the possibility of accidental discharge to nearby waterways, must be acknowledged, and mitigated. Jackson Report at 14. While it is true that the process wastewater disposal system includes a storage tank of unknown size,[5] the MND fails to disclose the environmental impacts that would result if the lift pump failed during a period of high wastewater generation, when the holding tank is likely to be full. *Id.* Additionally, the route that the process wastewater disposal pipeline will take is unknown and must be disclosed. Because significant environmental impacts could occur from the lift pump's failure and from the construction and backfill of the pipeline trenches, an EIR must be prepared. *Id.*

Because under this new plan irrigation would simultaneously occur with both well water and processed wastewater, groundwater contamination could result. Because the Project could cause the contamination of important groundwater supplies, an EIR must be prepared.

Furthermore, the increased subsurface flow that will result from this new irrigation method could potentially "contribute to a decreased in slope stability below the vineyards. Therefore, a geologist should assess the stability of the slopes below the vineyards." *Id.* Because of the potential for significant impacts noted above, this assessment must be provided in an EIR.

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4 While the Project Description unequivocally states that process wastewater would be used to irrigate the Cornell Vineyards, the text of the MND itself states that process wastewater could be disposed of in a septic system. *See* MND at 37 ("all process wastewater will be treated onsite and disposed in a sub-surface septic system and irrigated on the vines"). If the domestic wastewater septic system and leach field is also anticipated to accommodate process wastewater, or an additional system and field are to be constructed, this must be clearly indicated in the MND.

5 The size of the holding tank will determine whether or not process wastewater will need to be used to irrigate the vineyards during the rainy season, with resulting environmental impacts, and must be disclosed. Jackson Report at 14-15.

F. *The MND Obscures the Relationship Between Groundwater Use and Surface Flow.*

The applicant proposes to pump water from Mark West Creek during the winter months in order to eliminate the need for pumping during the months of August to October; this collected water would apparently be stored in a 102,000 gallon tank. Atterbury & Associates, Inc. June 3, 2010, "Summary of Proposed Water Use and Mitigation" ("Atterbury Report"), at 3, 6. This modification to the Project is not acknowledged in the Project Description.[6]

Although this winter pumping is anticipated to eliminate the Project's need to pump groundwater during the months of August, September, and October, the Project will still pump groundwater for use during the months of November through July. Atterbury Report at 6. The potentially significant impacts of this pumping have not been disclosed in the MND. The MND relies upon Todd Engineers' conclusion that groundwater pumping will not have any impacts upon Mark West Creek because the area of influence from the pumping would be at most 500 feet and the "distance between the well and Mark West Creek and its tributaries is greater than 500 feet." MND at 26. But Todd Engineers' methodology is flawed because it assumed that the pump would only operate for 18 hours when in fact it is likely to operate for 90 days in a row. Jackson Report at 25-27. When this error is accounted for, the area of influence from the pumping is revealed to be at least 1,114 feet, not 500 feet. *Id.* at 27. "A portion of the unnamed tributary to Mark West Creek is within th[is] radius of influence . . . so it is likely that the flow in the tributary will be diminished by the operation of the . . . [P]roject well." *Id.* at 28-29. Because this is a potentially significant impact, an EIR must be prepared.

The Staff Report relies upon the conservation easement to mitigate the Project's water use. *See, e.g.,* Staff Report at 8-10. But as NOWWE has previously discussed, it is not clear that the conservation easement will actually result in any conservation of water during the summer months when flows in Mark West Creek are low and the need to avoid pumping is most critical; the low flows in Mark West Creek during those times of year mean that there is unlikely to be enough water for both the Project and the 100 Wappo Road property to pump water simultaneously. *See, e.g.,* NOWWE November 5, 2009, comment letter, at 4-5. If the conservation easement is going to fully mitigate the Project's water use such that an EIR is not required, it must mitigate the Project's entire water use at each and every time of year. No evidence in the record supports such a conclusion. As just discussed, the Project will pump water directly from the unnamed tributary of Mark West Creek during July. The attendant impacts,

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6 The substantive text of the MND in this regard is confused and confusing. The MND does not mention a 102,000 gallon tank. It does state that the two rainfall storage tanks totaling 140,000 gallon capacity (discussed *supra* section IV(B)) would "capture rain during the wet season for re-use *during the dry season.*" MND at 27 (emphasis added). But these 140,000 gallon tanks are planned to be used "for landscape irrigation *throughout the year*," and landscaping needs are not accounted for in the Project's water use, as discussed above. MND at 2 (emphasis added).

including impacts to aquatic habitat, are potentially significant and therefore render an EIR necessary. *See* Jackson Report at 31; August 31, 2010 Report of Stacy K. Li, at 1.

G. *The Requirements of the Sonoma County Groundwater Checklist ("Checklist") Have Not Been Met.*

The Staff Report concludes that compliance with the Sonoma County Groundwater Checklist is unnecessary because (1) the Todd Engineers report constituted "a thorough analysis of the watershed surrounding the Project site"; and (2) the conservation easement, rainwater capture proposal, and winter pumping of groundwater will "sufficiently offset the winery water use." Staff Report at 8, 10. As discussed above, these later three conservation methods are insufficient to *fully* offset the Project's water use at each and every time of year. And, as discussed below, the Todd Engineers report is riddled with deficiencies and does *not* constitute "a thorough analysis." Because of the Project's potentially significant effects on groundwater, an EIR is required.

As acknowledged in the Staff Report (on page 7) and by Todd Engineers, the cumulative impact area of the Project would extend into both the North Watershed and the South Watershed. Jackson Report at 18. But the Todd Engineers report does not actually determine the amount of water that can be stored in this area, even though the Checklist requires such a determination. Jackson Report at 19. Although the Todd Engineers study failed to determine whether or not the South Watershed is in overdraft, even Todd's overinflated figures show that the North Watershed is in overdraft during dry years. *Id.* at 24-25. (Todd's figures inflate both the aquifer's recharge rate and the amount of return flow from the vineyard.) A constant rate aquifer test must be required in order to accurately determine the Project's groundwater impacts.

V. THE MND FAILS TO ACKNOWLEDGE THE PROJECT'S TRAFFIC IMPACTS.

The Project involves an enormous amount of excavation. Approximately 3,400 to 4,500 truck trips will be required to export all of the graded material, if the swell factor[7] – overlooked by the MND – is accounted for. Waldbaum Review at 8. The MND fails to acknowledge the resulting traffic impact. The revised MND's figures are inconsistent, because they were erroneously copied from the re-circulated October 2009 MND (at page 17). *See* MND at 22 (Project requires "13,515 cubic yards of excavation" and "1,289 cubic yards of fill," purportedly leading to a "net 6,340 cubic yards" to be "removed off site").

The MND fails to account for the environmental impacts of this enormous volume of truck traffic. St. Helena Road, which these trucks will be required to traverse, "is a narrow, very winding, rural mountain road. Large trucks have great difficulty negotiating its tight, blind

7 The swell factor is the multiple by which excavated soil increases in volume compared to its original, compacted size.

curves without crossing the double centerline, endangering oncoming vehicle traffic, bicyclists, and pedestrians." Waldbaum Review at 8. Despite the fact that the Project will send over 3,000 trucks into this potentially deadly situation, the MND mysteriously concludes that the Project will certainly have no impact related to "increase[d] hazards due to a design feature" such as "sharp curves." MND at 36.

The MND also ignores the air quality impacts of unleashing this cavalcade of trucks upon St. Helena Road.

Because each of these impacts is potentially significant, an EIR is required.

W. THE MND UNLAWFULLY DEFERS THE FORMULATION OF MITIGATION MEASURES

CEQA requires that, when an agency decides to prepare an MND, mitigation measures must be incorporated into the project "*before* the proposed negative declaration is released for public review . . . ." *Sundstrom, supra*, 202 Cal.App.3d at 306 (quoting CEQA Guidelines § 15070(b)(1)). That is to say, "requir[ing an] applicant [to] adopt mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA." *Id.*

It is true that an agency may properly condition MND approval on, for example, an applicant's compliance with known and measurable air and water quality, or other environmental, standards. *Id.* at 308. This is because compliance with such standards is based on "specific performance criteria articulated at the time of project approval." *Sacramento Old City Ass'n v. City Council* (1991), 229 Cal.App.3d 1011, 1028. However, such a situation *only* arises where an agency "recognize[s] the significance of the potential environmental effects, commit[s] itself to mitigating their impact, and articulate[s] specific performance criteria." *Gentry, supra,* 36 Cal.App.4th at 1395.

Requiring applicants to *commission future studies* and comply with the mitigation measures recommended in them, on the other hand, has been repeatedly held to violate CEQA. For example, in *Sundstrom*, a developer was planning to construct a hotel and restaurant; after potential impacts to hydrology and soils became apparent, the County required the applicant to "have a study prepared by a civil engineer which evaluates potential effects of the proposed development upon soil stability, erosion, sediment transport, and the flooding of downslope properties and contains recommended mitigation measures to minimize such impacts." *Sundstrom, supra*, 202 Cal.App.3d at 306. The County also required review and approval of the plan by planning and building services, after which the mitigation measures would be incorporated into the use permit. *Id.* The court held that this condition constituted a "post hoc rationalization of agency actions" that would "inevitably have a diminished influence on decisionmaking" and thus violated CEQA. *Id.* at 307. Moreover, such deferral of mitigation measures subverts one of the key purposes of CEQA: to ensure the adequacy of environmental

review by exposing it to the public and interested agencies. *Id.* at 307-08. "By merely requiring administrative approval of the hydrological studies, the use permit provides no . . . guarantee of an adequate inquiry into environmental effects." *Id.* at 307. Finally, the court also held that the mitigation measure violated CEQA by improperly delegating to the planning commission staff the responsibility to, in essence, determine the adequacy of the negative declaration. *Id.* at 307.

Similarly, in *Gentry, supra,* 36 Cal.App.4th at 1396, the court also found a mitigated negative declaration to violate CEQA because it contained a deferred mitigation condition. There, the project approval permitted the City to require the applicant to submit a biological report regarding the Stephens' kangaroo rat; if such a report were to be required, the applicant would have to comply with "any recommendations" in it. *Id.* This condition was "on all fours with the condition in *Sundstrom*" and therefore also constituted an improper deferral of mitigation. *Id.* Because the record contained "substantial evidence to support a fair argument that the Project, even as mitigated . . . would have a significant effect on the Stephens' kangaroo rat . . . any proposed mitigation for impacts on the . . . rat had to be made available for public review" and not deferred for future formulation. *Id.* at 1397.

These cases are on point and govern the situation here. The MND unlawfully defers the formulation of numerous essential studies and mitigation measures, including mitigation measures intended to demonstrate the absence of impacts from runoff, mitigation measures intended to manage erosion to less-than-significant levels, and studies and mitigation measures to avoid impacts to rare plants and special-status animals.

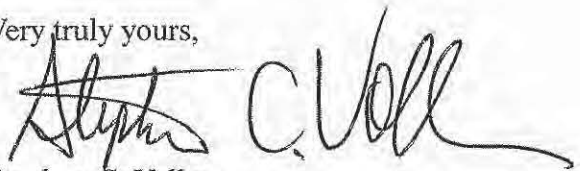
Since the record contains "substantial evidence to support a fair argument that the Project, even as mitigated . . . would have a significant effect" in these areas, "*any* proposed mitigation [measures] for impacts" to such resources "ha[ve] to be made available for public review." *Gentry, supra,* 36 Cal.App.4th at 1397. Their formulation may not be deferred to a later date so as to preclude public review. They must be provided now, in an EIR, before this Project may be considered for approval.

VI. CONCLUSION.

As demonstrated above, there is a "fair argument" that the Project "may" have a significant environmental impact. Therefore, an EIR is required. NOWWE urges the Board of Zoning Adjustments to mandate preparation of a full Environmental Impact Report, in accordance with the law. If the County fails to prepare an EIR, NOWWE will be impelled to pursue appropriate legal remedies.

Thank you for considering our views on this important matter.

Very truly yours,



Stephan C. Volker
Attorney for New-Old Ways
Wholistically Emerging

APPENDIX F

Comment Letter F, Exhibit F.B Appendix

Comment Letter F, Exhibit F.D Appendix

Comment Letter F, Exhibit F.H

Comment Letter F, Exhibit F.I

Comment Letter F, Exhibit F.J

Comment Letter F, Exhibit F.M

Comment Letter F, Exhibit F.N

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APPENDIX

STATE OF CALIFORNIA—STATE AND CONSUMER SERVICES AGENCY
EDMUND G. BROWN JR., Governor

DEPARTMENT OF Consumer Affairs

STATE BOARD OF REGISTRATION FOR
GEOLOGISTS AND GEOPHYSICISTS
1020 N STREET, SACRAMENTO, CALIFORNIA 95814
TELEPHONE: (916) 445-1920

Dear Licensee:

Enclosed for your information is a policy statement on the adequacy of professional geological work as represented by the guidelines for practice issued by the California Division of Mines and Geology. It was adopted by the board at the July 17, 1978, meeting.

Agencies can establish more stringent guidelines for reports and are not restricted by the policy statement from developing additional requirements for specific geologic conditions.

The policy will become effective January 1, 1979. Reports dated subsequent to that date will be reviewed for their adequacy when they are submitted to the board. Reports submitted to governmental agencies before January 1 will not be reviewed for adequacy unless a complaint is filed with the board.

Sincerely,

JAMES E. SLOSSON
President

JES:els

Enclosure

GUIDELINES FOR STANDARDS OF PRACTICE OF GEOLOGY IN CALIFORNIA

The State Board of Registration for Geologists and Geophysicists met with regulatory geologists from cities and counties throughout California, with Division of Mines and Geology personnel, with representatives of associations, and with individual consultants to discuss possible violations of the Act and practices which may not be violations of the Act but substantially affect the public. Three meetings were held and over 20 participants discussed the adequacy of geologic reports, and the responsibility of the board, the review agencies, and the consultants to the public.

As a result of these meetings, the board decided that responsible geologic work is represented by the guidelines for practice issued by the California Division of Mines and Geology for the investigation of geologic hazards and the preparation of reports as California Division of Mines and Geology Notes Numbers 37, Guidelines to Geologic/Seismic Reports; 43, Recommended Guidelines for Determining the Maximum Credible and the Maximum Probable Earthquakes; 44, Recommended Guidelines for Preparing Engineering Geologic Reports; 46, Guidelines for Geologic/Seismic Considerations in Environmental Impact Reports; 47, Recommended Guidelines for Geologic Reports on Offshore Operations and Facilities; 48, Checklists for the Review of Geologic/Seismic Reports; and 49, Guidelines for Evaluating the Hazard of Surface Fault Rupture.

The board adopts these guidelines as its policy statement on the adequacy of professional geological work under Section 7860(c) of the Business and Professions Code for the geologic profession in California. The guidelines will be used to facilitate a screening of the geologic reports for violations of Section 7860(c).

The board suggests that all regulatory agencies consider adoption of these notes or equivalency as guidelines for investigation and for report preparation. Also, it urges all geologists to utilize the procedures outlined in the notes when they investigate conditions at a project and when preparing reports.

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APPENDIX

1. Sonoma County PRMD requirements for water availability investigations in water scarce areas.

2. Jonathan Tracy approval dated August 17, 2004 of substandard RGH water availability investigation report.

3. Jonathan Tracy memorandum to Jennifer Barrett, Peter Parkinson (PRMD Director), Dean Parsons and Segrid Swedenborg , dated June 7, 2005

4. Email exchanges with Jonathan Tracy regarding unsubstantiated exemptions to Sonoma County PRMD water availability investigation requirements.

5. California Department of Water Resources finding of substandard water availability investigation by RGH.

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EXHIBIT H

September 7, 2011

North Fork Mark West Creek
Sonoma County

Fisheries Survey
On August 26, 2011 at 13:22, Associate Fisheries Biologist Derek Acomb and Volunteer Desiree Dela Vega, along with residents Casey Caplinger and Laura Waldbaum participated in a fish presence survey on the North Fork of Mark West Creek. Resident Laura Waldbaum had previously contacted biologist Acomb and requested assistance in identifying the species of fish present in isolated pools on the North Fork of Mark West Creek below the county road.

The site was accessed by entering the stream from St Helena Road at the North Fork Mark West creek culvert crossing and walking downstream to the start location.

The air temperature was measured to be 84º F. The water temperature was measured to be 62º F.

Fish were captured using one-meter pole seine nets and aquarium dip nets. Captured fish were placed in five gallon plastic buckets with stream water and held for identification and observation.

Two aged 1+ steelhead (*Oncorhynchus mykiss*) were caught from the mid pool. This pool showed signs of rapidly decreasing water levels. Both fish were relocated to the confluence pool.

One aged 1+ steelhead (*Oncorhynchus mykiss*) was caught from the culvert outfall pool. This pool showed signs of rapidly decreasing water levels. This fish was relocated to the confluence pool.

The two pools surveyed showed signs of rapid decreases in water evidenced by relatively long wetted margins of the pools. Usually receding water levels drop slowly enough to allow the substrate to dry and leave a rather small wetted margin. It was decided that if the pools continued to dry the fish present in them would perish due to lack of water. Due to the rapidly deteriorating instream conditions and the limited number of fish present, it was decided to relocate the captured fish. A downstream pool that would persist the remainder of the season that was believed to be large enough to accept the fish was selected for release. The three fish were released in Mark West Creek at the North Fork confluence pool.

Start location: 38.52070º north, 122.59164º west NAD 83
Mid Pool: Pool mid way between confluence and county road

End location: 38.52086º north, 122.59135º west NAD 83
Culvert: Culvert outfall at county road

Release location: 38.52000º north, 122.59260º west NAD 83
Confluence: Mark West Creek at North Fork confluence pool

EXHIBIT I

September 7, 2011

Mark West Creek
Sonoma County

Fisheries Survey
On August 26, 2011 at 15:50, Associate Fisheries Biologist Derek Acomb and Volunteer Desiree Dela Vega conducted a fish presence snorkel survey on Mark West Creek.

The site was accessed by entering the stream at Casey Caplinger's property off St Helena Road. The stream was dived using snorkel and mask with wet suit by biologist Acomb.

The water temperature was measured to be between 58º F and 62º F.

Fish were visually observed under the water surface using a snorkel and mask. Only species and age classes were identified. There was no effort to quantify the numbers of fish present in the stream.

The species observed were:
Young of the year (YOY, or 0+) steelhead (*Oncorhynchus mykiss*)
1+ steelhead (*Oncorhynchus mykiss*)
2+ steelhead (*Oncorhynchus mykiss*)
Resident steelhead (*Oncorhynchus mykiss*)
sculpin (genus: *Cottus*)
California giant salamander (*Dicamptodon ensatus*)

Steelhead of varying age classes were observed through out the length of the survey.

Differences in water temperature were observed. In some pools the layer just above the gravel on the bottom felt cooler than the water near the surface of the stream. Pool surface water felt more similar to surface water entering the pools. Temperature measurements on four pools were taken to see if there was a difference in surface and bottom temperatures.

Temperature Pool	Surface Temperature	Thalweg Temperature
1	62º F	62º F
2	61º F	59º F
3	59º F	59º F
4	60º F	58º F

Based on observations and measurements this reach of stream may warrant further investigation to determine if pool stratification or cool water upwelling is occurring. More precise thermometers would be needed to better quantify the temperature differences.

Start location: 38.51868º north, 122.59924º west NAD 83

End location: 38.51919º north, 122.59623º west NAD 83

EXHIBIT J

On August 16, 2011 NOWWE representatives discovered that the water in the Northb Fork of Mark West Creek below the Culvert on St Helena Rd was no longer flowingb continuously and Steelhead had become stranded in small pools in what had formerly been the Creek.bMark West Creek is a blue line creek which historically did not becomeb intermittent during summer.b

NOWWE representatives contacted both National Marine Fishery Service and Fish andb Game to report the stranding of salmonids and the extreme low water level in the Creek.b We photographed stranded steelhead and several of the pools to document the situation.b

Stranded steelhead in pool 2 taken 8/22/2011

. On August 22, the creek experienced a rapid and extreme draw down in the water level.b

One day drop in water level photo taken 8/22/2011

On August 26 Derek Acomb of Fish and Game with his assistant volunteer Desiree Delab Vega came up to the North Fork. Several fish were captured and relocated furtherb downstream. We photographed the processb and requested that Derek provide us with a brief written summary of his observations.b Below are photographs taken 8/b6/2011 of theb Fish and Game steelhead "rescue". Note the size of the larger fish, not this year's fry.b

On August 29 the Creek experienced another rapid draw down event.bThis resulted inb several pools shrinking to such a small size that fish were left exposed waiting to die.b

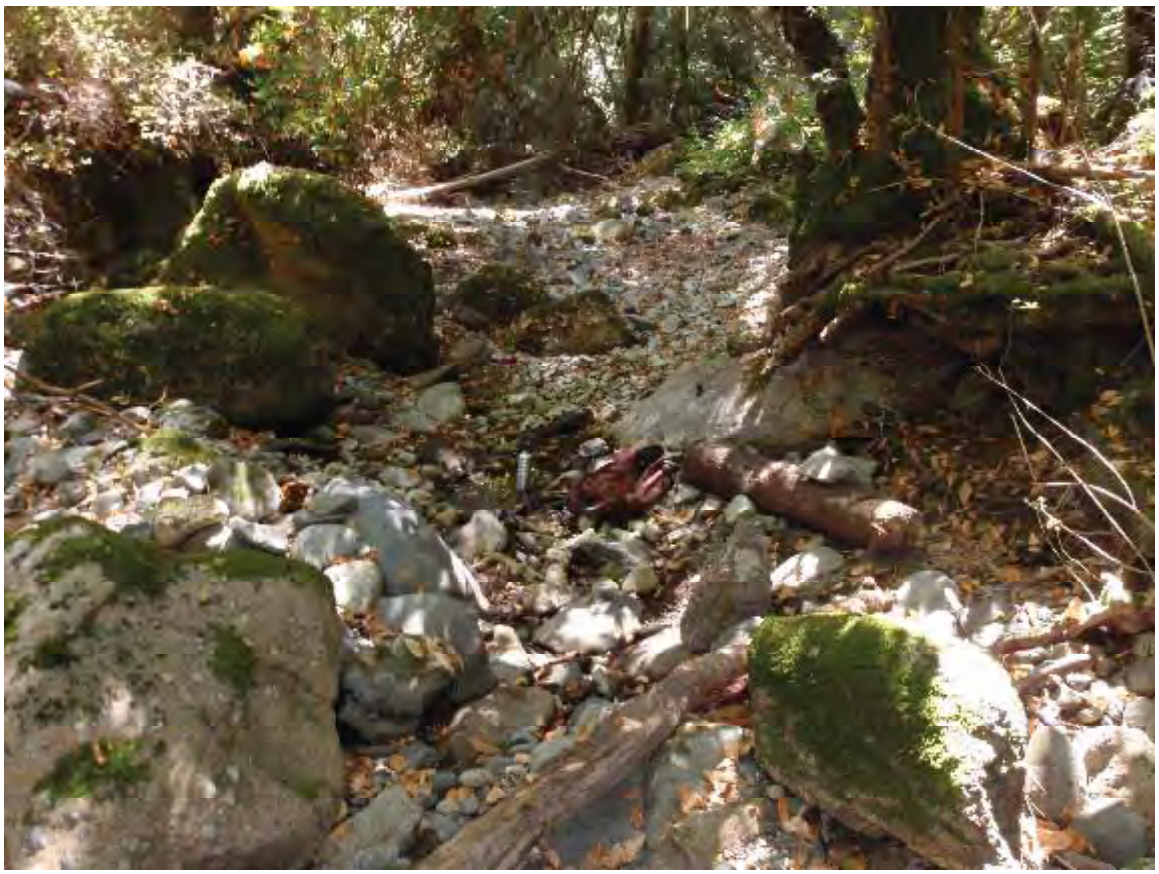
Below are photographs taken of the same pool, (pool 2), over a 10 day period and theb resultant dying fish.b

Pool 2 on Augustb 1

Pool 2 on Augustb23bwith reference point circledb

We also photographed a dying steelhead which had become “beached”.b

Close up of pool 2 taken August 31 note concrete circled in photo above.



Pool 2 taken August 31b
The water in pool 2, which had contained the larger steelhead, is almost totally gone.b

EXHIBIT M

For the record vwitnessed a potable water truck delivery to Pride Winery 12/5/2011v

Truck arrived at Pride gate at 1:15pmv

aura Waldbaumv

EXHIBIT N

COTTON, SHIRES AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

November 9, 2011
G5020A

TO: David Hardy
Supervising Planner
Sonoma County
Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, California 95403

SUBJECT: **Geologic and Geotechnical Peer Review**
RE: Proposed Storm Water Storage Tanks
Cornell Winery
245 Wappo Road

At your request, Cotton, Shires and Associates, Inc. (CSA) has completed a geologic and geotechnical peer review of permit applications for the subject project construction using:

- Geotechnical Study Report Update, Cornell Winery, 245 Wappo Road, Santa Rosa, California (report), prepared by RGH Consultants, Inc. (RGH), dated October 21, 2011.

In addition, we have reviewed pertinent regional geologic maps, reviewed several stereo pairs of historical aerial photographs of the site, and reviewed samples from a core boring drilled at the proposed project site.

DISCUSSION

It is our understanding that the applicant is planning to build two water storage tanks to impound storm water at the proposed winery site in rural eastern Sonoma County. Access to the proposed tank site will be via a proposed driveway that would connect to Wappo Road.

In the referenced report update, the Project Geotechnical Consultant (RGH) provides the results of their subsurface exploration at the proposed tank site. The report also provides seismic design criteria. An exploration plan and log of a single core boring drilled at the tank site are attached to the report.

SITE CONDITIONS

The proposed tank site consists of an existing cut pad bordered by side-cast fill on the downslope side. Below the pad, moderately steep to steep natural slopes descend to the west toward an incised stream that is a tributary to Mark West Creek.

Regional geologic mapping (CGS, 1980; Special Report #120) indicates that the site is underlain by Pliocene volcanic rock; the same report also shows landslides northwest and southwest of the proposed tank site. It is our understanding that subsurface exploration by the Project Geotechnical Consultant has shown that the winery site is underlain by bedrock of the Franciscan Complex. Based upon our review of core samples from the single core boring drilled at the proposed tank site, it appears that the site is underlain by melange of the Franciscan Complex. At shallow depths, the

melange is intensely weathered, but weathering decreases gradually with depth. It appears that fresh (unweathered) melange was encountered at a depth of 42 feet.

CONCLUSIONS AND RECOMMENDED ACTION

In the referenced report, the Project Geotechnical Consultant concluded that "there is no evidence of landsliding in the area of the rain water tank site". However, the consultant did not include an engineering geologic map or cross section with the referenced report to substantiate their conclusion. Though they may have reviewed aerial photographs of the site, they did not provide a description of the results of their aerial photograph interpretation or a photogeologic map showing that interpretation. If they had compiled published landslide maps of the site, it was not discussed in the report, nor was a compilation map attached to the report.

It is our understanding that design of the tanks and tank foundations will be based upon recommendations provided by the Project Geotechnical Consultant. Therefore, the consultant should provide design recommendations for the tanks. In addition, plans for the tanks should be submitted for permit application.

We recommend that the consultant provide a supplemental report with additional information explaining the basis of their conclusions regarding the stability of the proposed tank site. Geotechnical design recommendations for the proposed tanks should be included in the report. Thus, we request the following additional evaluations be conducted prior to geotechnical approval of permit applications for construction of the proposed storm water storage tanks:

1. **Supplemental Engineering Geologic and Geotechnical Engineering Evaluations** - The Project Geotechnical Consultant should provide documentation of supplemental geologic and geotechnical evaluations that support feasibility of the proposed storm water storage tanks. The report should include additional information to explain and substantiate their conclusions regarding the stability of the proposed tank site. This information should include a description of the results of their interpretation of aerial photographs and compilation of published landslide mapping. The consultant's photogeologic map depicting site geomorphic features should be included in addition to a description of the results of air photo interpretation. A map showing the compiled published landslide mapping should be included with the report. The report should include an engineering geologic map depicting the distribution of bedrock, surficial deposits, landslides, and significant geomorphic features. The report should also include an engineering geologic cross section through the proposed tank site and extending at least from the ridge to the downslope drainage; the cross section should depict the current surface profile, pre-grading profile, and the subsurface geology. Also, the consultant should provide geotechnical design criteria recommendations for the proposed storm water storage tanks and the tank foundations.

   The results of the supplemental engineering geologic and geotechnical engineering evaluations should be summarized in a written report with appropriate illustrations and provided to the County for peer review prior to project geotechnical approval.

Once the Supplemental Engineering Geologic and Geotechnical Engineering Evaluations have been completed and approved, the following items should be addressed. The project design should be modified to conform to the findings and recommendations of the requested supplemental evaluations.

2. **Civil Engineering Plans** - After satisfactory completion of the Supplemental Engineering Geologic and Geotechnical Engineering Evaluations, the Civil Engineering Consultant should incorporate the geotechnical recommendations into the design.

   Appropriate plans should be provided to the County for geotechnical peer review prior to issuance of building permits and prior to project geotechnical design approval.

3. **Geotechnical Plan Review** - The Project Geotechnical Consultant should review all geotechnical aspects of the project building and grading plans (i.e., site preparation and grading, site drainage improvements and design parameters for foundations, and retaining walls). The consultant should verify that their recommendations have been properly incorporated into the construction plans.

   The results of the plan review should be summarized by the geotechnical consultant in a letter and submitted to the County for review prior to issuance of building permits.

4. **Geotechnical Field Inspection** - The geotechnical consultant should inspect, test (as needed), and approve all geotechnical aspects of the project construction. The inspections should include, but not necessarily be limited to: site preparation and grading, site surface and subsurface drainage improvements, and excavations for foundations and retaining walls prior to the placement of steel and concrete.

   The results of these inspections and the as-built conditions of the project should be described by the geotechnical consultant in a letter and submitted to the County for review prior to final project approval.

LIMITATIONS

This preliminary geologic and geotechnical peer review has been performed to provide technical advice to assist the County in its discretionary permit decisions. Our services have been limited to review of aerial photographs, core samples, and the documents previously identified. Our opinions and conclusions are made in accordance with generally accepted principles and practices of the geotechnical profession. This warranty is in lieu of all other warranties, either expressed or implied.

Respectfully submitted,

COTTON, SHIRES AND ASSOCIATES, INC.

Ted Sayre
Principal Engineering Geologist
CEG 1795

David T. Schrier
Principal Geotechnical Engineer
GE 2334

TS:DTS:PJ:st

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APPENDIX G

Comment Letter G, Attachment G.1
Comment Letter G, Attachment G.2
Comment Letter G, Attachment G.3
Comment Letter G, Attachment G.4
Comment Letter G, Attachment G.5
Comment Letter G, Attachment G.6
Comment Letter G, Attachment G.7

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-4731

April 6, 2012

In response, please refer to:
151416SWR2012SR00059

Tony Linegar
Agricultural Commissioner/Sealer
County of Sonoma
133 Aviation Boulevard, Suite 110
Santa Rosa, California 95403

Dear Mr. Linegar:

The County of Sonoma (County) recently suspended their Grading, Drainage, and Vineyard and Orchard Site Development Ordinance (Ordinance) in order to review and refine it with regard to tree removal and minimizing hillslope erosion. NOAA's National Marine Fisheries Service (NMFS), North Central Coast Office in Santa Rosa has received a draft of the proposed Ordinance refinements via email on April 4, 2012, and intends to submit specific comment on the revisions in the near future. Nevertheless, NMFS considers that now is an appropriate time to highlight several of our general concerns with the Ordinance that if not addressed, may impact protected salmon, steelhead and their habitat. Many Sonoma County streams and rivers support Northern California and Central California Coast steelhead (*Oncorhynchus mykiss*), Central California Coast coho salmon (*O. kisutch*), and Coastal California Chinook salmon (*O. tshawyscha*), which are all listed under the Endangered Species Act of 1973 (ESA), as amended. In the past, the County has worked collaboratively in partnership with NMFS in efforts to conserve and recover these species. Please consider the following general comments and concerns that we have with the current Ordinance, as well as some suggested changes to address our concerns.

We believe the most significant shortcoming of the current Ordinance is the lack of the California Environmental Quality Act (CEQA) analysis during the County's permitting process. The Ordinance requires adherence to Best Management Practices (BMP) and preparation of an erosion control plan, both of which suggest techniques to minimize erosion and riparian habitat degradation resulting from vineyard and orchard grading and planting (*e.g.*, cover crop planting, season of work, drainage improvements, *etc.*). If an applicant agrees to follow the BMPs and erosion control plan, a grading permit is ministerially granted by the Sonoma County Agriculture Commission. This process avoids meaningful environmental review. There are many potential impacts arising from grading and vineyard/orchard development (Garrison 2000). With regard to salmon and steelhead habitat, removing trees and vegetation from large hillslope areas can induce

or accelerate surface erosion, impair groundwater infiltration, and alter storm hydrology in adjacent creeks. Moreover, ripping the soil to remove remaining roots can destabilize hillsides and trigger landslides (Cluer and Lee 2005). Once this sediment enters streams and rivers, the impact on salmon and steelhead habitat is significant, and may continue impacting fish and habitat for decades.

The mechanisms through which fine sediment can impact salmonids and their habitat are numerous and varied. High concentrations of suspended sediment can disrupt normal feeding behavior (Berg and Northcote 1985), reduce juvenile growth rates (Crouse *et al.* 1981), and increase blood sugar levels and behaviors related to stress (*e.g.*, increased coughing frequency and avoidance behavior) (Servizi and Martens 1992). Increased sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing juvenile survival (Alexander and Hansen 1986) and holding habitat for adults. Excessive fine sediment can increase substrate embeddedness, impair egg development and fry emergence (Chapman 1988), and impede redd excavation (Cederholm *et al.* 1997). High levels of fine sediment in streambeds can also reduce food abundance for juvenile salmonids (*e.g.*, Cordone and Kelly 1961; Bjornn *et al.* 1977). Chronic, long-term exposure to even low to moderate concentrations of suspended sediment can stress fish and reduce their reproductive success. A recent case prosecuted by NMFS' Office of Law Enforcement documented erosion-related impacts to listed salmon and steelhead from grading and hillslope development in Mendocino County (Cluer and Lee 2005).

Napa County, which shares a highly valuable wine industry similar to Sonoma's, does not require CEQA review for any grading project that occurs on hillslopes less than 5 percent. However, all other grading projects in Napa County undergo CEQA environmental review. We believe that in order to adequately consider and minimize grading related effects, the County should also conduct CEQA analysis on grading and vineyard/orchard development projects and issue discretionary rather than ministerial grading permits. NMFS is willing to work with the County to determine a credible definition for "benign" grading projects that are unlikely to impact listed species or water quality, and may offer selective permit streamlining.

Sonoma County should adopt a progressive grading ordinance similar to Napa County's that includes an adequate level of environmental review that would be afforded by employing CEQA. While we consider the County's BMP guidelines a worthy step toward minimizing soil erosion and other surficial erosional processes, the BMPs cannot address the complex and site-specific geologic and hydrologic characteristics of every situation. Only a thorough site-specific analysis vetted through public and resource agency review will avoid conditions that are a precursor to landslides and hillslope failures and resulting adverse habitat impacts.

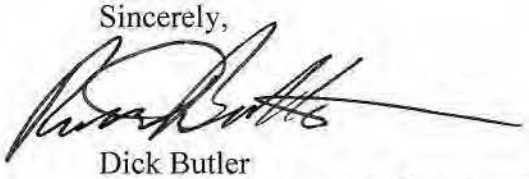
Finally, rigorous environmental review of hillslope grading will be critical with the apparent trend of expansion to "hilltop" vineyards throughout the county. Following several decades of intense agricultural development in Sonoma County (vineyard acreage jumped almost 32 percent to approximately 48,000 acres between 1990 and 1997; Merenlender 2000), more recent development is occurring in upslope areas as preferred valley land becomes scarce. The development trend includes the proliferation of timber to vineyard conversions occurring in coastal watersheds, such as the Gualala River. These previously undeveloped headwater and coastal stream systems represent some of the last vestiges of functional coho salmon habitat within the county, and radical

changes from one land-use to another (*e.g.,* from forest or grassy areas that may have been used for pasture to actively planted and managed agriculture) should be subjected to CEQA review and discretionary approval.

Thank you for the opportunity to provide comments and assist the County in amending the Ordinance. We are confident the amended Ordinance will be protective of listed species and their habitat while at the same time streamlining the County's permitting process to the greatest extent.

Please contact Rick Rogers at 707-578-8552 or rick.rogers@noaa.gov if you have questions or comments about this letter.

Sincerely,



Dick Butler
North Central Coast Office Supervisor
Protected Resources Division

cc: S. Edmondson, HCD, NMFS, Santa Rosa
Scott Wilson, DFG, Yountville
Eric Larson, DFG, Yountville
Grant Davis, SCWA, Santa Rosa
Pete Parkinson, Sonoma County PRMD

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Well Pump Test Guidelines in Water Scarce Areas

PURPOSE

These Guidelines will apply to well pump tests performed for the purpose of demonstrating compliance with minimum water quantity requirements of the Sonoma County Code for residential construction in water scarce areas or second dwelling units in marginal water availability areas of Sonoma County.

GENERAL

Pump tests conducted on or after the effective date of this policy will remain valid for a period of 3 years or as long as aquifer conditions remain substantially the same as established by a Registered Geologist or Registered Civil Engineer. [Grandfather clause: Pump tests accepted by the County prior to this Policy's initial implementation date of 06-08-04 will remain valid for 3 years from the date of the test.]

AUTHORITY

Sections 7-12, 25-17, 25-56 and 26-88-060H of the Sonoma County Code.

DEFINITIONS

"Discharge rate" means the rate at which the well discharges water (usually expressed in gallons per minute).
"Draw down" means the difference measured in feet between the static and dynamic water levels.
"Dynamic water level or stabilized pumping level" means the level of water in the well during the pump test.
"Post-test static water level" means the level of water seventy-two hours after the pump test.
"Recovery" means the difference in feet between the post test static water level and the pumping level (dynamic water level)
"Specific capacity" means the discharge rate divided by the draw down (usually expressed as gallons per minute per foot of draw down).
"Static water level" means the level of water in the well before the pump test.

PROCEDURE

A. Pump Test Requirements

1. General Conditions

   The Sonoma County Code requires demonstration of at least one gallon per minute per dwelling unit for new or replacement dwellings located in water scarce areas and for second dwelling units in marginal water availability areas. The code specifies a sustained

yield, metered pump test from a well or wells for a specified time period of 8-12 hours for water systems with 1-2 connections, 16-24 hours for water systems with 3-4 connections and 72 hours for systems with 5 or more connections. The 72 hour test may be modified by the administrative authority but in no case shall be less than 48 hours. Note: Also refer to Section 64563 of the California Code of Regulations for systems with 5 or more connections.

Testing to meet the above yield requirements shall be conducted from July 15 to October 1 each year or as extended by the Project Review and Advisory Committee. This time period is referred to as the dry weather pump test period. The Permit and Resource Management Department shall be notified 24 hours in advance of any testing. Pump tests may be performed by or under the direction of a licensed drilling contractor (C57), pumping contractor (C61/D21), a Registered Civil Engineer or a Registered Geologist.

2. A copy of the previously completed State of California Department of Water Resources Well Completion Report, if available, shall be submitted with the completed Permit and Resource Management Department's form, Certification of Water Yield in Water Scarce Areas - WLS-010.

3. If multiple wells are being used to meet the minimum water production requirements, then all wells must be pumped simultaneously.

B. Pre-Test Requirements

1. Identify the location of the well, by either the NAD83 California State Plane II or WGS 84 lat./long. or by the measured distance reference to a fixed landmark. Record this information on the WLS-010 form. Include the estimated elevation of the well head.

2. Measure and record the static (non-pumping) water level in the well. If well is operational, so note on the WLS-010 form. Provide information on measuring points (top of casing, surface seal, access port, etc.) Measurements should be taken relative to ground level. The measuring point above ground level should be measured and noted on the WLS-010 form. In order to establish the static level, the well must not be pumped for at least 12 hours prior to measurement of the static water level.

3. Record the type of discharge measurement method. Indicate the type and model of flow meter or provide an accurate description of weir or orifice plate set up.

C. Twelve-Hour Pump Test Method

1. Record the static level.

2. Calculate the volume of water stored in the well.

3. Remove a volume of water equivalent to the calculated volume stored in the well.

4. Select a dynamic water level for the test. Lower the water level to the selected dynamic water level as quickly as possible. Maintain the dynamic water level for the duration of the test by adjusting the discharge rate. Pump at a rate of no less than one gallon per minute and continue pumping for twelve hours.

5. If it is not feasible to use a water level sensing device (probe), a stable pumping rate must be maintained for a period of 3 hours prior to the start of the sustained yield test. This condition may require pulling the pump to determine the static water level prior to conducting the test, reinstalling the pump to conduct the test, and pulling the pump again to read the 72 hour recovery.

6. If a low water yield pump protector device is used and the dynamic water level is not established above the pump setting, the dynamic water level will be assumed to be at the pump.

7. Record the dynamic water level and discharge rate according to the following schedule:

Time since pumping began (including pumping to remove stored volume)	**Time Interval**
0-5 minutes	1 minute
5-60 minutes	5 minutes
60-100 minutes	20 minutes
100 minutes to establish the dynamic water level	30 minutes

Once the stabilized dynamic water level has been reached for a minimum period of 3 hours, the water level must be read a minimum of every 12 hours to the end of the test.

8. At the end of the pumping test, measure, and record the final discharge rate and dynamic water level.

D. Alternative Eight-Hour Pump Test Method

1. An alternative eight-hour pump test method can be used instead of the twelve-hour pump test method for systems of 1 or 2 connections if, after 4 hours of pumping, the specific capacity is greater than 0.05. While conducting the alternative eight-hour pump test the dynamic water level and discharge rate are to be recorded in accordance with the time intervals specified in Section C above.

E. Alternative Sixteen-Hour Pump Test Method

1. An alternative sixteen-hour pump test method can be used instead of the twenty-four hour

pump test method for systems of 3 or 4 connections if, after 4 hours of pumping, the specific capacity is greater than 0.05. While conducting the alternative sixteen-hour pump test the dynamic water level and discharge rate are to be recorded in accordance with the time intervals specified in Section C above.

F. Post Test Measurement

1. Measure and record the static level in the well seventy-two (72) hours after the final dynamic water level measurement.

G. Calculate the Well Recovery

1. Determine the water level draw down by subtracting the initial static water level measurement from the stabilized dynamic pumping level. Record this result as the well draw down.

2. Next determine the water level recovery by subtracting the post test (72 hour) static water level from the stabilized dynamic pumping level. Record this result as the well recovery.

3. Next determine the percent recovery of the well. Divide the water level recovery by the water level draw down and multiply by 100. Record this result as the percent well recovery.

   Example:

   a. Initial static water level: _____ (Measured value)

   b. *Post test static water level: _____ (Measured value)

   c. **Stabilized Pumping level: _____ (Measured value)

   d. Draw down: _____ (Calculate by subtracting A from C)

   e. Recovery: _____ (Calculate by subtracting B from C)

   f. Percent recovery: _____ (Calculate by dividing E by D and multiplying the results by 100)

   Well percent recovery (F) must be 90% or greater within a 72 hour period.

* The static water level after 72 hours or less post pump test.
** Kleinfelder refers to this as the dynamic pumping level.

ATTACHMENTS

None

Approved by:

/s/ Pete Parkinson

Pete Parkinson, Director

Lead Author: Kleinfelder Associates

Revisions:
06-08-04 03/25/05
07-13-04
09-02-04

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-6528

June 7, 2005

Sonoma County Board of Supervisors
575 Administration Drive, Room 100-A
Santa Rosa, California 95403

Dear Supervisors of Sonoma County:

NOAA's National Marine Fisheries Service (NMFS) is writing in relation to a request by W. Guy Davis for a new winery at 420 Wappo Road, Santa Rosa, California, APN 028-260-047, Supervisorial District 1.

NMFS is responsible for the protection, maintenance, and recovery of anadromous salmonids. The Mark West Creek watershed supports steelhead trout (*Oncorhynchus mykiss*) and may still support coho salmon (*Oncorhynchus kisutch*), both listed as threatened species under the Federal Endangered Species Act. We are deeply concerned about degrading habitat quality in Mark West Creek from cumulative development activities such as water supply development and fine sediment generation from grading activities.

Mark West Springs Creek is excellent juvenile steelhead rearing habitat, but tends to have low stream flow during the summer and fall. There are two dewatering reports in Mark West Creek in the California Department of Fish and Game files. One was directly upstream of 775 Mark West Springs Road and the other was along St. Helena Road at Rancho Mark West. Any vineyard development should verify where they will get their water. We would prefer that the water source not be tied to surface flow without first evaluating potential impacts on salmonid habitat.

Fine sediment in streams adversely affects spawning habitat, rearing habitat, and aquatic invertebrate production that is food for fish. Minimizing non-point source pollution is also a concern of the Regional Water Quality Control Board. It is identified in their Basin Plan. Please ensure that land development is not occurring in inappropriate places such as areas of high landslide potential.

TROUT UNLIMITED

June 21, 2005

Sonoma County Board of Supervisors
575 Administration Dr.,
Santa Rosa, CA 95403

RE: Proposed Winery, 420 Wappo Road, Sonoma County, CA

Dear Board of Supervisors,

I am writing to request that you require a full EIR for this proposed project. We are extremely concerned that the impact of this project will have an extremely negative impact on the fishery resources of both Mark West Creek and the Russian River.

We are very concerned about the potential depletion of ground water resources by this project. Mark West Creek is a very important fisheries resource and is already suffering from severe habitat degradation due to diversion of water, both surface and groundwater, that once found its way to the creek. Mark West Creek is recognized as an important spawning and rearing resource for the Russian River for wild steelhead. The fish depend of having adequate water in the creek for their survival. This proposed project will rely on massive amounts of ground water pumping from an aquifer that clearly is contiguous to the creek and that directly affects water levels in the creek. This water withdrawal will come at a time, the summer and fall months, when water quality thresholds will be critical for the survival of young fish.

The various documentation, reports and actions that have been presented or occurred relative to this project raise grave concerns that indicate problems are present. A faulty THP used to clear land, an inadequate Negative Declartion, and the lack of a geologist's report, given the proposed site is identified as geologically unstable on the county' maps, are all indications of serious problems. NOAA and the Regional Water Quality Control Board have indicated that cumulative impact of projects such as this one is a serious unaddressed issue. We strongly agree that the county must also consider cumulative impact prior to considering approval of projects such as this one

Please do not hesitate to contact me if you need further information.

Sincerely,

David Katz
California Director

TROUT UNLIMITED: America's Leading Coldwater Fisheries Conservation Organization
California Office: 1120 College Ave., Santa Rosa CA 95404
(707) 543-5877 www.tucalifornia.org

REQUEST FOR SERVICE

County of Sonoma
Permit And Resource Management Department
Well & Septic Section
2550 Ventura Avenue, Santa Rosa, CA 95403 (707) 565-1900

Location Address: 420 WAPPO ROAD
City, Zip: SANTA ROSA 95404
Owner/Facility Name: HENRY CORNELL / CORNELL WINERY
Assessor's Parcel #: 028-260-047
Address of Owner: 2555 LAGUNA RD (GUY DAVIS, G.M.)
City, State, Zip: SANTA ROSA 95401
Person Requesting Service: TOM CONNELL (ATTERBURY + ASSOC.)
Phone: 433-0134
Address of Person Requesting Service: 16109 HEALDSBURG AVE, #D
City, State, Zip: HEALDSBURG 95448
Description: SOIL PROFILE PIT INSPECTION FOR SEPTIC SYSTEM (PRE-PERC)

By

Date: 11/1/02
Permit #: SWD02-1398
EHS ____ Dist # ____
Category ____ Priority ____

Classification
A. Complaint
B. Site Review
C. Plan Check
D. Recheck/Reinspection
E. Vesting
F.

Disposition:
1. Service Completed
2. Follow Up
3. Referral
4. Referral Completed
5. Enforcement
6. No Violation
7. No Action

Report of Investigation

Pre perc conducted on 11/21/02 with Tom Connll of Tom Atteburry Asoc. Site was on a hillside where trees had been cleared. Area of profile hole 1 is too rocky. Can use the area of holes 2 + 3 and split the distance between holes 1 + 2 and use the ½ close to hole 2.
Looking for possible [illegible] this area has limited potential due to [illegible] size. Possible for standard system [illegible] able to use an [illegible] system if you can [illegible] slope requirements.

For office use

EHS: [signature]
Date Completed: 1/6/02 ... 1/6/0[illegible]

8055A00008 01/06/02 SUBTTL 272.00

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-4731

April 18, 2012

In response, refer to:
150502SWR2011SR00493

David Hardy
Supervising Planner
County of Sonoma
Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, California 95403-2829

Dear Mr. Hardy:

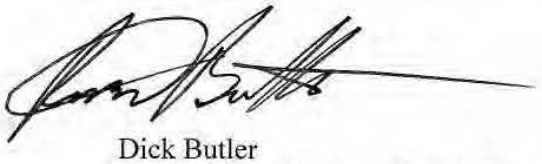
This letter transmits NOAA's National Marine Fisheries Service's (NMFS) comments regarding Sonoma County's (County) February 27, 2012, Notice of Preparation of a Draft Environmental Impact Report (draft report) for the proposed Henry Cornell Winery (winery), Sonoma County, California. The proposed winery will be located near the mainstem and North Fork of Mark West Creek, a tributary of the Russian River that contains Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) and coho salmon (*O. kisutch*) listed as threatened and endangered, respectively, under the Endangered Species Act, as amended. Mark West Creek also contains designated critical habitat for CCC steelhead. NMFS offers the following comments and suggestions concerning the draft report.

Agricultural and residential development during the past several decades has put a tremendous strain on surface and groundwater resources within the Mark West Creek watershed. Average well depths within the lower half of the watershed have increased nearly three-fold over that time, and the aquifer is likely in a state of overdraft (Kleinfelder 2003). Anecdotal evidence suggests that summer baseflows within the upper Mark West Creek near the proposed winery have dropped considerably during the past several decades (J. Doerksen, personal communication), and are approaching levels that are likely deleterious to juvenile steelhead and coho salmon (CDFG 2011). NMFS suggests that before it is finalized, the EIR should assess potential cumulative impacts to the groundwater aquifer and associated seasonal hydrology of the upper Mark West Creek watershed that may result from the proposed winery project, and whether those impacts are likely to impair instream habitat quality for salmon and steelhead. Water savings or mitigation achieved through stormwater capture and storage, waste-water reuse, or other techniques should be thoroughly described and validated.

The potential for project-related erosion to cumulatively impact aquatic resources within the upper Mark West Creek watershed should also be thoroughly investigated as part of the draft report. In 2006, a landslide on the Cornell property introduced fine sediment into the North Fork Mark West Creek, significantly impairing instream habitat in the North Fork and mainstem creek for approximately 4,000 feet downstream (Li and Parkinson 2009). The draft EIR should adequately assess the potential for further geologic instability resulting from the project, and the resulting threat to instream aquatic resources.

NMFS appreciates the opportunity to comment during the scoping process for the Cornell Winery draft Environmental Impact Report. Please contact Rick Rogers at 707-578-8552, or rick.rogers@noaa.gov, if you have any questions or concerns regarding this letter.

Sincerely,



Dick Butler
North Central Coast Office Supervisor
Protected Resources Division

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California Department of Fish and Game. 2011. Field observations from biologist Derek Acomb concerning steelhead stranding in upper Mark West Creek and relocation of fish. August 26, 2011.

Kleinfelder. 2003. Pilot study of groundwater conditions in the Joy Road, Mark West Springs, and Bennett Valley areas of Sonoma County, California. Prepared for Sonoma County, September 17, 2003. 46 pp. with appendices.

Li, S., and D. Parkinson. 2009. Habitat inventory and initial assessment of anthropogenic sedimentation of Upper Mark West Creek, Sonoma County, California. Prepared for NOWWE. June 27, 2009. 24 pp.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-4731

September 18, 2012

In response, refer to:
150502SWR2011SR00493

David Hardy
Sonoma County Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, California 95403

Dear Mr. Hardy:

This letter transmits initial comments from NOAA's National Marine Fisheries Service (NMFS) to the Sonoma County Permit and Resource Management Department (County) regarding their August 2012 Draft Environmental Impact Report (DEIR) for the proposed Cornell Winery at 245 Wappo Road, Santa Rosa, California (Project). The proposed winery is located near the upper mainstem of Mark West Creek (MWC) and North Fork MWC, streams containing Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) and CCC coho salmon (*O. kisutch*), and CCC coho salmon critical habitat, as listed under the federal Endangered Species Act (ESA) of 1973, as amended. NMFS offers the following comments to help the County refine and improve the analysis and information presented within the DEIR.

Page III-9: The Project described in the DEIR differs from that which was most recently brought to Sonoma County for permitting as a Mitigated Negative Declaration (MND). Specifically, the Project has dropped the mitigation measure that would have relinquished the water right at the 100 Wappo Road and precluded future development of the property in perpetuity (the measure now appears within Alternative 2b). This measure was identified by the California State Water Board (Water Board) as critical mitigation that, in combination with other hydrologic mitigation, led the Water Board to believe the proposed Project was reasonable with respect to winery water use (California Department of Water Resources 2009, 2011). Given the lack of new analysis between the time of the MND and the current DEIR, there should be a more in-depth explanation of why the previously proposed relinquishment of water rights at 100 Wappo Road are no longer necessary to adequately mitigate the Project's hydrologic impacts.

Page IV.C-6: Table IV.C-1provides a summary of area inflow and outflow for several pertinent watersheds in the study area, including the North Fork watershed and South watershed that contain sections of the Cornell property. However, the listing of "Upper Mark West Creek" in the

table is confusing, since there is no explanation of its geographic boundaries. Earlier in the document, a map of the 254 square-mile Mark West Creek watershed is erroneously labeled "Upper Mark West Creek Watershed" (see Figure IV.C-1); the *upper* Mark West Creek watershed is generally considered as the area above the confluence of Weeks Creek, but a formal designation likely does not exist. What is important is that any analyses of hydrologic impacts take place at the relevant scale. Project-related effects (hydrology and sediment) are likely realized primarily within the upper reaches of the Mark West watershed (*e.g.*, above Tar Water Road Bridge), so the use of the entire Mark West Creek watershed for comparative purposes is misleading and does not address potential localized impacts in the upper watershed.

Page IV.C-7: The water quality monitoring presented within the DEIR fails to evaluate Project impacts at relevant spatial and temporal scales. For instance, water quality sampling site MWC120 is located almost a mile below the Project area, a distance too great to confidently identify water quality effects (*e.g.*, increased turbidity) arising from Project operations. Likewise, the summer and early fall periods are poor times for documenting turbidity effects in stream environments, since higher stream flows (*e.g.*, following a fall freshet or winter storm) are usually necessary to suspend sediment and create turbid conditions. Given the recent (2006) landslide on Cornell property coupled with the low turbidity readings presented in the DEIR, NMFS suspects the testing was not performed during a high-water event, but was instead performed during the summer low-flow period.

Table IV.C-5: It is unclear whether lost groundwater infiltration due to rainwater interception is factored into the analysis of Net Water Usage at Cornell Farms (page IV.4-28). Rainwater harvesting from impervious surfaces (*e.g.,* roof-tops and paved areas) has the potential to diminish groundwater percolation and recharge, which can give rise to an overdraft condition or exacerbate the persistent lowering of groundwater levels where an overdraft situation already exists. Several factors suggest the upper Mark West Creek aquifer is already in an overdraft state, such as anecdotal evidence that summer stream flows have dropped precipitously during the past few decades, greater well depths have recently been required to access groundwater, and that some residents have trucked in water supplies during summer months.

Page IV.C-33: The DEIR states, "*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).*" The manner by which the DEIR portrays the amount of annual stream flow diverted for winery storage (*i.e.,* by rainwater harvesting) as a percentage of overall annual stream flow volume is misleading. The harvesting of rain that would otherwise run into creeks and provide winter stream flow has its greatest effect within the streams directly downstream of the collection site. Characterizing the harvesting effect as the loss of only 140,000 gallons of rainwater from the 93,400 acre-feet of annual flow occurring within the much larger Upper Mark West Creek watershed (undefined in the document, but assumed as the area portrayed on Figure IV.C-1) grossly underestimates the true magnitude of the effect within affected reaches in the North Fork MWC and directly downstream. The DEIR does represent this effect at the more appropriate scale of the North and South Watersheds; however, any effects analysis done at the scale of the Upper Mark West Creek watershed (as portrayed in Figure IV.C-1) should be removed.

Furthermore, the effects analysis noted above considered only *annual* volumes of water instead of shorter, more pertinent time periods. The effect of harvesting rainwater and the resultant near-term loss of overland flow and, by extension, dampening of the stream flow hydrograph, should all be characterized at the most biologically meaningful temporal scale, which is the specific period when harvesting occurs (*i.e.,* during the storm itself). Potential hydrologic and biological impacts will occur at the time of rainwater harvesting; therefore, characterizing the impacts based upon an analysis of annual water volumes lacks meaning and should be removed from the document.

Page IV.C-34, bottom of second paragraph: While discussing cumulative hydrologic and water quality effects from other nearby parcels, the DEIR states…"*water use for these vineyards and wineries is not available".* However, water consumption for a given land-use is often estimated using generally agreed-upon rates and values (*e.g.*, 1/3 acre-foot per planted acre per year; see Erickson Engineering Incorporated 2009). Therefore, the lack of actual irrigation or household water-use data should not stop the County from performing a proper water budget analysis (including groundwater pumping estimates) for the affected area in question, an analysis critical to understanding potential long-term impacts to groundwater and surface stream flow sustainability.

Page IV.C-35, first paragraph: The DEIR points to an August 1, 2012, California State Water Resources Control Board letter that states: "…. *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)."* To put this statement into proper perspective, SWRCB (2012) is the closure of a previous complaint against the diversions of Cornell from the Mark West Creek basin (complaint 49-15-07). In closing the complaint, the letter concludes, "*No new and compelling evidence was presented in response to the ROI* (Report of Investigation) *to show that the diversion…was responsible for the diminished flow in Mark West Creek…"* To conclude that this letter supports the supposition that Cornell is not responsible for lower flows in Mark West Creek is logically false – the fact that no new evidence was submitted demonstrating an effect does not prove an effect does not exist. Actually, no detailed analysis was performed to prove or disprove any potential effect. The CEQA process "*…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* (see page I-1 of DEIR)." In short, the DEIR should not rely on the California State Water Resources Control Boards complaint correspondence as support regarding the cumulative hydrologic effects of a <u>new</u> proposed Project.

In conclusion, the National Marine Fisheries Service appreciates the opportunity to comment on the DEIR for the proposed Cornell Winery on Wappo Road, Sonoma County, California. NMFS recognizes the many mitigation measures adopted for the Project, and commends the applicant for incorporating cutting-edge technology in crop irrigation and rainwater harvesting to help mitigate impacts to the upper Mark West Creek watershed. If you have any comments or concerns regarding this letter, please contact Rick Rogers at 707-578-8552, or rick.rogers@noaa.gov.

Sincerely,

FOR

Dick Butler
North Central Coast Office Supervisor
Protected Resources Division

cc. Chris Bond, SWRCB - Division of Water Rights
Robert L'Heureux, SWRCB - Division of Water Rights

Literature Cited

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California Regional Water Quality
North Coast Region
Preharvest Inspection R

To: **Christine Wright-Shacklett, SEG**
Leslie Markham, CDF, Review Team
Glenn Edwards, RPF
File

From: **Cherie Blatt, SEA** CB
Dave Hope, ES III
Andrew Baker, AEG

Date: **February 28, 2001**

Subject: Preharvest Inspection Report, Recommendation for Denial of Approval, THP 1-00-411 SON, Henry Cornell, landowner, John Waithman, timber owner, Guy Davis/Davis Family Vineyards, Plan Submitter, Mark West Creek Watershed, Russian River Basin

On December 18, 2000, we attended a preharvest inspection (PHI) for Timber Harvest Plan 1-00-411 SON. Also in attendance were Chuck Joiner and Ken Margiott, California Department of Forestry (CDF), Stacy Martinelli, California Department of Fish and Game (CFG), Glenn Edwards, Registered Professional Forester (RPF), Roy Flatt, California Department of Parks and Recreation and Galen Bullock, a licensed timber operator. The weather was cool and clear.

General THP Summary

This THP is located on Wappo Road off St. Helena Road approximately nine miles northeast of Santa Rosa. Unnamed watercourses drain the THP area to Mark West Creek, a major tributary containing anadromous fish in the Russian River Basin. The Russian River has been listed by the U.S. Environmental Protection Agency as an impaired waterbody under Section 303(d) of the Clean Water Act. High sediment loads in the Russian River necessitated the impairment listing. Both Coho Salmon and Steelhead Trout, listed as "Threatened" under the Endangered Species Act, are present in the Russian River Basin.

The THP states that Class II and III watercourses are within the THP boundary. THP page 14 states that Class II watercourses will be given 100 foot watercourse and lake protection zones (WLPZs), and Class III watercourses will be given 25 foot wide equipment limitation zones (ELZs) on slopes less than 30 percent and 50 foot ELZs on slopes over 30 percent. All spring/wet areas delineated on THP maps are stated to have 50 foot ELZ protection.

The THP, dated November 15, 2000, proposes to log a total of 38 acres within several units. Some units are adjacent to cleared, seeded and mulched vineyard plots within the property ownership but outside of the THP harvest boundaries. Silvicultural methods for the THP include 4 acres of Seed Tree Seed Step, 14 acres of Seed Tree Removal Step, 9 acres of Selection, 2 acres of Commercial Thinning and 9 acres of Conversion. Yarding is proposed to be accomplished using tractor and skidder systems. The THP contains Moderate Erosion Hazard Ratings (E.H.R.). No ground based equipment is proposed for slopes over 50 percent with high or extreme EHR and no in-lieu practices are proposed. Slopes within the THP boundary range from 15 to 65 percent with a mean annual precipitation of 59 inches per year (THP page 23). Permeability in the subsoil is listed as moderate with runoff ranging from medium to rapid.

Winter operations are limited to felling during dry periods in non-WLPZ areas with pickup truck access.

Onsite Observations

Class II Watercourses

The THP identifies two watercourses as Class II: the unnamed watercourse bordering the THP to the north (WQ1) and a small portion of a watercourse (WQ2) tributary to WQ1. No flagging was found marking the Class II WLPZ during the PHI. The THP states that Class II WLPZs are 100 feet wide (page 14). During the PHI, watercourse WQ1 appeared to contain fish habitat with no barriers to fish passage. Since the California Department of Fish and Game surveys for the Mark West area, as attached to the THP, do not show any fish barriers between Mark West Creek and the northern portion of the THP area, it is recommended that WQ1 be classified as Class I. This recommendation is further supported by the CFG memo "Restorable Habitat for Anadromous Fish" dated October 6, 2000 (attached). The memo states that future land use planning decisions should not preclude potential for steelhead restoration or reintroduction. The WLPZ should be flagged as Class I and harvest trees appropriately marked in accordance with the Forest Practice Rules (FPRs). Details describing Class I protection for WQ1 should be added to the THP in accordance with the FPRs, Section 916.9 (c) and (g). **(Recommendation 1)**

If the RPF identifies a barrier to fish passage to watercourse WQ1, then a description and mapped location of the barrier should be sent to the NCRWQCB and the CFG for review.

Class III Watercourses

The THP map (page 22) shows approximately 13 Class III watercourses as within or directly adjacent to the THP unit boundaries. These watercourses were inspected during the PHI. Four were found to contain Class II pool formations for aquatic habitat. These four watercourses (WQ3, WQ4, WQ5 and WQ6) should be designated as Class II watercourses and given a minimum WLPZ of 100 feet. Harvest trees should be appropriately marked according to FPR 916.9 (c). **(Recommendation 2)**

Unstable Area

An unstable area was found during the PHI at point WQ7. Hummocky soil was present over the extent of the unstable area with soil piles over three feet high up slope and against the large conifer trunks. A Class III watercourse flows through the center of the unstable area and several pistol butt trees were present on the area indicating possible soil movement during the lifetime of the trees. The unstable area is located directly above the reclassified Class I watercourse (WQ1) and below cleared vineyard land. The unstable area has the potential to discharge sediment to the Class I watercourse if disturbed by timber harvest and vineyard activities. Mitigation for this unstable area should be added to the THP such as flagging a heavy equipment exclusion zone around the perimeter, marking appropriate trees for retention to transpire groundwater and reduce pore water pressure and increasing vineyard erosion control up gradient. THP page 11 should be updated to describe the unstable area, harvesting prescriptions, heavy equipment exclusions and mitigations. The THP map on page 22 should show the location and size of the unstable area. **(Recommendation 3)**

THP Watercourse and Boundary Flagging

There appeared to be at least three THP boundary flagging discrepancies between THP map page 22 and what was found in the field during the inspection:

East of the green house, the map shows the distance from the green house to the THP unit boundary (WQ8) as approximately 250 feet. In the field, the THP boundary orange flagging was only a few feet from the house.

There was a discrepancy between the THP map page 22 and what was found in the field at point WQ9. The watercourses, unit boundary and skid trail marked on the THP map were changed by the RPF during the PHI. The THP map should be resubmitted reflecting the conditions found in the field.

There was also a discrepancy in mapping the head of the Class III watercourse at WQ10. During the PHI, it appeared as if the head of the Class III watercourse had been tilled for the vineyard. The THP map should correctly map all Class III watercourses including those previously tilled for vineyards. Additional mitigation measures should be added to restore the Class III watercourses. Expansion of THP boundaries for inclusion of headwalls of previously tilled Class III watercourses is recommended.

The THP text, maps and field flagging should be corrected as listed above. **(Recommendation 4)**

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Water Quality Prelim. Inspection Report
THP 1-00-411 SON

Vineyard

The areas proposed for clearcut under the Conversion silvicultural method were inspected. Some of the areas appeared quite steep for vineyard conversion which raises concern for water quality. On November 12, 1999, the NCRWQCB sent a letter to the Sonoma County Board of Supervisors regarding the Proposed Vineyard and Sediment Control Ordinance. Specific comments were submitted to increase water quality protection in accordance with the Porter Cologne Water Quality Control Act and the Water Quality Control Plan for the North Coast Region. The letter proposed the following: "Vineyards should not be developed on slopes greater than 30 percent unless sound documentation is developed to demonstrate that a proposed vineyard project is in a location where vineyard runoff will not impact waters of the State. Significant increased erosion potential and sediment delivery to streams can occur with vineyard development on slopes greater than 30 %." An Erosion and Sediment Control Plan (ESCP), dated July 20, 2000, was designed for the Davis Family Vineyards by Atterbury Associates Civil Engineering. The project description on page 1 states: "This project will add approximately 24.0 acres of new vineyards with an average slope of approximately 27 %." In addition to the concern for water quality degradation from vineyard development on steep slopes, we were unable to evaluate cumulative impacts to resources. The Cumulative Impacts Assessment, Section IV, states that "Low" or "No" impacts are expected from past, present or future projects. Vineyard development on slopes over 30 percent should be mapped separately in the THP (page 22), evaluated separately in the THP in the Cumulative Impacts Assessment section (page 30-49) and evaluated separately on the Erosion Hazard Rating sheet (page 54) (soil detachability is of special interest in these areas). Timing of specific mitigations to reduce soil loss and adverse water quality impacts on these high disturbance areas should be detailed in the THP. **(Recommendation 5)**

We are concerned about the water quality effects from the increase in flows due to vineyard clearing and timber harvesting. The THP does not address the potential change in runoff from the project. It has been documented that reductions in vegetative cover reduces evapotranspiration, rainfall interception, and fog interception. (Ziemer, 1998) This in turn, may cause bank and channel instabilities resulting from increased runoff. We are also concerned about potential changes in summer flows in the Class I and II watercourses. The THP lacks information regarding well development or surface water drafting from the creeks and the quantities needed for vineyard supply. Overdrafting of groundwater or surface waters may affect down stream summer flows. Changes in stream flow volume, increased storm flow discharges and changes to stream channel morphology along with the resulting adverse impacts to beneficial uses should be addressed. In addition, the THP should mitigate these changes to protect the beneficial uses of water. **(Recommendation 6)**

THP Wording Concerns

Springs and Wet Areas

THP page 14 states that: "All spring/wet areas delineated on the THP maps will have a 50 feet Equipment Exclusion Zone (EEZ) flagged around it. No heavy equipment will operate within this zone." Based upon the observance of several misclassified watercourses, we recommend that any springs or wet areas within the THP ownership be re-checked for Class II aquatic habitat. Springs and wet areas containing potential aquatic habitat should be given Class II WLPZ protection. Wording on THP page 14 should be updated to reflect this protection measure. **(Recommendation 7)**

Haul Route

The non-appurtenant road haul route (Wappo Road, see THP map, page 22) was inspected. Several erosion problems such as bare inside ditches and gullies were evident and have the potential to discharge sediment to the Mark West Creek watershed. THP page 18 under "LTO Instructions" states: "The non-appurtenant road that will be used for log transport from the THP site is shown on the THP maps. The LTO will be responsible for all necessary road surface blading, installation of erosion control measures and the maintenance of all erosion control structures associated with the use of the road until the Work Completion Report is signed off by CDF." The RPF should include site specific measures in the THP for erosion control and maintenance on this road to ensure a sediment discharge to the Mark West Creek watershed is avoided. **(Recommendation 8)**

Skid Trail Crossings

Page 19 of the THP contains a prescription for temporary skid trail crossings, however these crossings are not marked on the THP maps. Due to the potential for sediment discharge to watercourses from timber harvest activities and vineyard management, it is recommended that the location of all skid trail crossings be added to the THP map. **(Recommendation 9)**

Boundary of THP Conversion Area

Several discrepancies were found in comparing the ESCP map page 2 to the THP map page 22. The RPF should explain the discrepancies between the THP and the ESCP. It appears the ESCP shows vineyards in current timbered areas not proposed for timber conversion. All present and future land cleared for vineyards must be discussed in the THP. All maps must accurately reflect those areas proposed for timberland conversion. The THP section describing erosion control, habitat loss, water quality effects and cumulative impacts must be revised to accurately reflect proposed projects on the property. All maps must accurately show the project boundary as proposed in accordance with FPR Section 1034(x)(1). **(Recommendation 10)**

Cumulative Watershed Effects

The THP, as proposed on November 15, 2000, does not adequately reflect conditions found during the PHI, and as such, the Cumulative Watershed Assessment section is

inadequate in evaluating cumulative watershed effects. For instance, the effect on biological resources may be significant if reevaluated using the results of stream reclassification, unstable area assessment, mapping corrections and consideration of changes in stream flow and sediment discharge conditions. All recommendations in this report should be addressed such as erosion control mitigation on roads and skid trails including the non-appurtenant road, mapping discrepancies, and total vegetation removal on the property before cumulative watershed effects can be evaluated. **(Recommendation 11)**

Agency First Review Questions:

14. The THP states that the effect on biological resources will not be significant after mitigation, what is the mitigation? (WQ)

Answer: Due to misclassification of watercourses, incorrect mapping, clearing of steep slopes, lack of adequate mitigation measures, discrepancies with the ESCP and lack of adequate evaluation of cumulative watershed effects, the THP is recommended for denial of CDF approval.

Recommendations

We recommend denial of approval of THP 1-00-411 SON. The following recommendations significantly change the original THP as proposed on November 15, 2000. A new THP may be submitted but must contain the following changes to reflect onsite conditions and adequate mitigations prior to CDF first review:

1. Watercourse WQ1 shall be reclassified as Class I. The watercourse shall be flagged with a Class I WLPZ and harvest trees appropriately marked in accordance with the Forest Practice Rules (FPRs). Details describing Class I protection for WQ1 shall be added to the THP in accordance with the FPRs, Section 916.9 (c) and (g).

2. Watercourses WQ3, WQ4, WQ5 and WQ6 shall be designated as Class II watercourses and shall be given a minimum 100 foot flagged WLPZ with trees appropriately marked according to FPR 916.9 (c).

3. Mitigation for the unstable area at WQ7 shall be added to the THP such as flagging a heavy equipment exclusion zone around the perimeter, marking appropriate trees for retention to transpire groundwater and reduce pore water pressure and increasing vineyard erosion control up gradient. THP page 11 shall be updated to describe the unstable area, harvesting prescriptions, heavy equipment exclusions and mitigations. The THP map on page 22 shall show the location and size of the unstable area.

4. There appeared to be at least three THP boundary flagging discrepancies between THP map page 22 and what was found in the field during the inspection. The THP text, maps and field flagging shall be corrected as follows: a.) East of the green house, the map shows the distance from the green house to the THP unit boundary

(WQ8) as approximately 250 feet. In the field, the THP boundary orange flagging was only a few feet from the house. b.) There was a discrepancy between the THP map page 22 and what was found in the field at point WQ9. The watercourses, unit boundary and skid trail marked on the THP map were changed by the RPF during the PHI. The THP map shall be resubmitted reflecting the conditions found in the field. c.) There was also a discrepancy in mapping the head of the Class III watercourse at WQ10. During the PHI, it appeared as if the head of the Class III watercourse had been tilled for the vineyard. The THP map shall correctly map all Class III watercourses including those previously tilled for vineyards. Inclusion of these Class III watercourse headwalls into the THP area for reforestation and protection from vineyard development is recommended. Additional mitigation measures shall be added to restore these damaged Class III watercourses.

5. So that water quality impacts, soil loss and cumulative impacts can be evaluated, vineyards proposed on slopes over 30 percent shall be mapped separately in the THP (page 22), evaluated separately in the Cumulative Impacts Assessment section (page 30-49) and evaluated separately on the Erosion Hazard Rating sheet (page 54). Timing of specific mitigations to reduce soil loss and adverse water quality impacts on these high disturbance/high risk areas shall be detailed in the THP.

6. Seasonal changes in stream flow volume, increased storm flow discharges and changes to stream channel morphology along with the resulting adverse impacts to beneficial uses shall be addressed. Information on the intake location and quantity of irrigation water needed for the vineyard shall be included. The RPF shall add mitigation measures to the THP to address the above concerns and ensure water quality protection during storm events. Timing of installation of mitigation measures shall also be specified.

7. All springs or wet areas within the THP ownership shall be re-checked for Class II aquatic habitat. Springs and wet areas with Class II habitat shall be given Class II WLPZ protection. Wording on THP page 14 shall be updated to reflect this protection measure.

8. The RPF shall include site specific measures in the THP for erosion control and maintenance on the seasonal haul road to ensure a sediment discharge to the Mark West Creek watershed is avoided.

9. Due to the potential for sediment discharge to watercourses from timber harvest activities and vineyard management, the location of all skid trail crossings shall be added to the THP map.

10. The RPF shall explain the mapping discrepancies between the THP and the ESCP. All present and future land cleared for vineyards shall be discussed in the THP under the sections describing erosion control, habitat loss, water quality effects and cumulative watershed effects. All maps must accurately show the project as proposed

Wappo Road THP
Notice of Intent Map

Property Boundary-
THP Boundary-
Existing Appurtenant Seasonal Roads-
Proposed New Temporary Seasonal Roads-
Existing Non-Appurtenant Seasonal Roads-
County Road (St. Helena Road)-
Skid Trail Locations Outside the THP Boundary- x x x
Watercourses-
Class II Watercourses-
Class III Watercourses-
Spring/Wet Area-
Water Tank-
Pond-
Stream Classification Change-
House/Structure-

Silviculture Methods

Selection-
Conversion-
Seed Tree Seed Step-
Seed Tree Removal Step- All not shown otherwise
Commercial Thinning-

All THP area site class III timberland
All THP area Moderate EHR

Scale: 1 inch = 500 feet
Contour Interval = 40 Feet
Portion of Sections #24 & 25, T8N, R7W, MDBM
Calistoga Quad
TE & Associates
Forestry Consultants